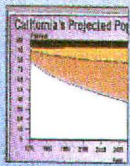


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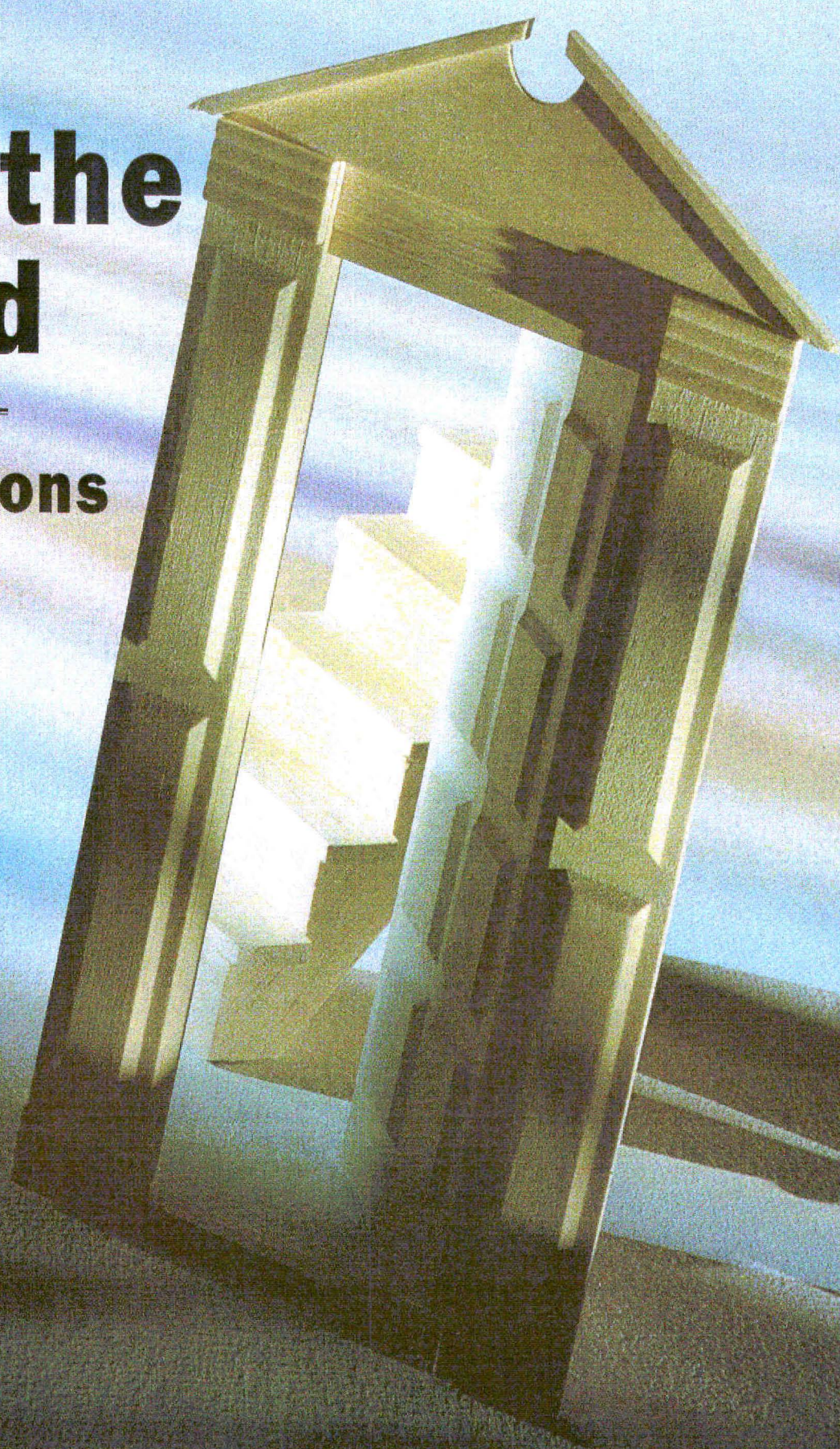


Reid Responds
Bumps on the
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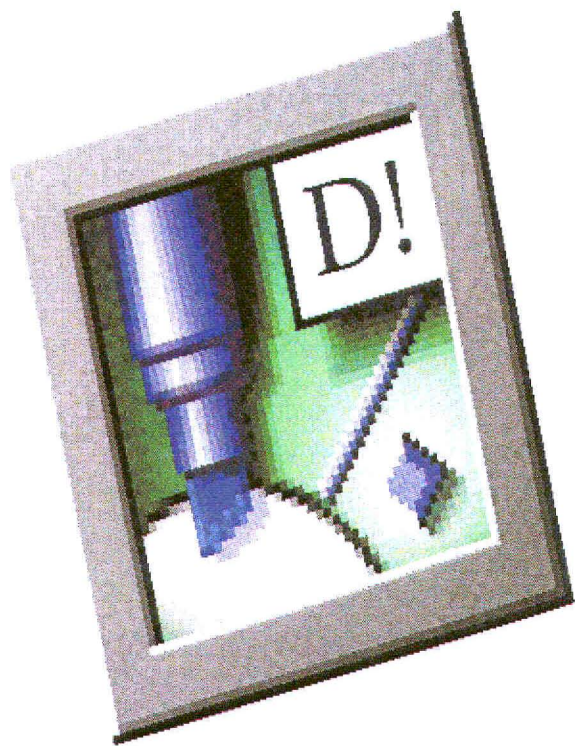


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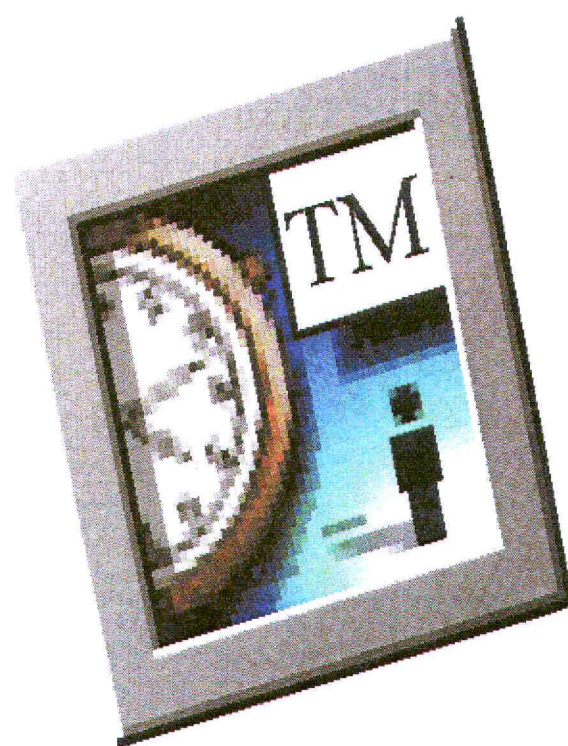
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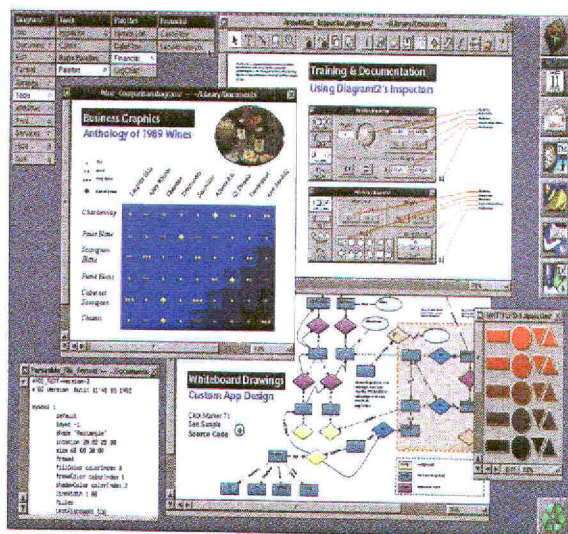


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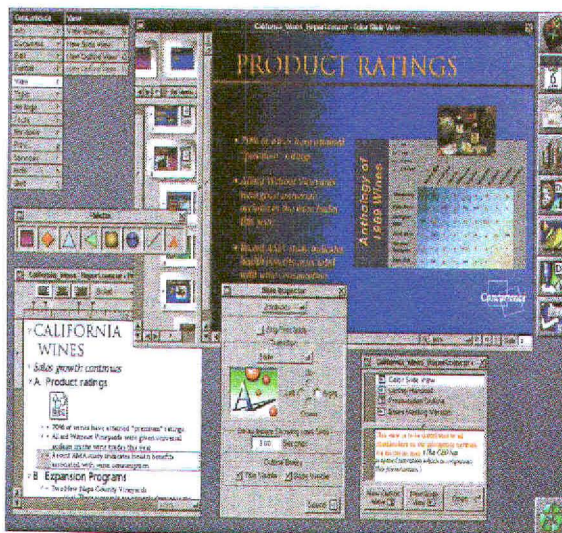
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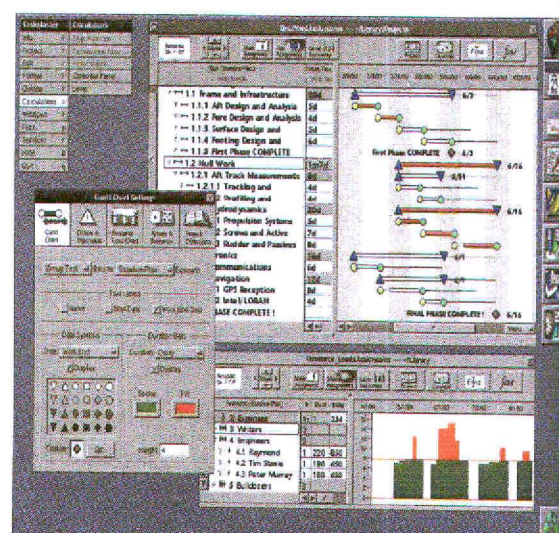
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NEXTWORLD

Vol. 4, No. 2 FEBRUARY 1994

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In the past, we used to speak of computing platforms. A platform was a combination of processor architecture, operating system, and application environment (including the user interface). We had the Intel/DOS/Windows platform, the Motorola/Macintosh platform, and the SPARC/UNIX/Motif platform, to name just a few.

As a computer manufacturer, the trick was to get application developers and end users to adopt your overall platform.

Today, the coupling of interface to operating system and operating system to processor architecture has broken down. We're getting close to the time when any OS can run on almost any processor, and any GUI can sit on almost any OS.

Guess what. The trick for computer companies is still to get application developers and end users to adopt their system. Only now, they don't care very much what the underlying hardware or operating system is. What matters is what sits on top – the application programming interfaces (APIs), or in SunSoft's parlance, the application environment.

The OpenStep announcement makes it clear just what NeXT is selling – or, in this case, licensing. It turns out to be no different from what NeXT has always been selling: an environment for developing and using application software. As we now know, the NeXT hardware and even the operating-system kernel were extraneous pieces. NeXT's product is the various software interfaces and tools that define the application environment.

But application environments are a dime a dozen, starting with the five flavors of Windows. IBM supports three or four environments. Then there are all those different UNIX variants.

The NEXTSTEP/OpenStep environment is different from most of the others because its primary application is software development. While it

also provides a home for end users to run commercial software, its differentiating factor is its object-oriented tools for developing custom applications.

For SunSoft, OpenStep will be one of three supported application environments, along with the Common Desktop Environment (CDE), the UNIX standard for procedural applications; and Windows, which is supported under Solaris through SunSoft's WABI technology. In the interview in this issue, SunSoft's Bud Tribble says he expects Solaris users to gradually migrate to OpenStep over a period of years. Other potential OpenStep supporters, such as Hewlett-Packard, also envision a gradual transition.

For those of us who have already recognized the benefits of NEXTSTEP, such a timetable seems unreasonably slow. But large user sites with big investments in legacy software cannot turn on a dime.

What they can and will do now is begin pilot projects and long-term evaluations. The important thing is that a direction has been set for them. They now have a road map that allows them to plan future systems and begin plotting a strategy.

Although NeXT and its third-party software and services providers won't see an immediate surge in sales, a corner has certainly been turned. The broad market will now look upon NEXTSTEP as an environment whose time will come, not a platform whose time has passed.

In terms of market psychology, that's a very big difference. Between the earlier HP deal on Object•Enterprise and the Sun deal on OpenStep, there is little doubt that a bandwagon is beginning to roll. The trick now for NeXT is to keep the momentum going by signing up more partners to endorse the OpenStep environmental movement. ♦

DAN RUBY is NeXTWORLD's editor in chief.

Environmental Movement

DAN RUBY



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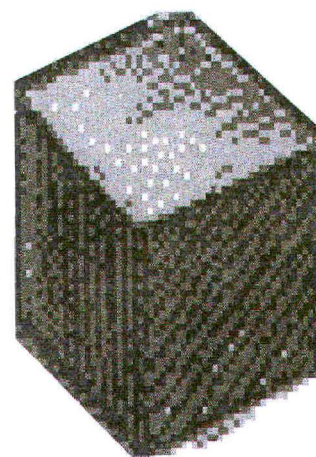
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Dangerous curves along The One True Way

I feel compelled to reply to Dan Ruby's column ("Shirts Off Their Backs," *NeXTWORLD*, December 1993), in which he paints a picture of "strategic mistakes" and failure for RightBrain Software and Appsoft, and ends with epitaphs. I won't speak for Appsoft, but I would like to respond for RightBrain.

Ruby points out that, after NeXT shifted its strategy, developers needed to "rethink their business model or slowly wither on the vine," and later, that newer developers were "prepared to go where NeXT led them." Wherever that might be. The road of NeXT's history is littered with abandoned marketing plans, major changes in corporate strategy, large numbers of personnel changes, and sudden surprises – from dropping optical disks to laying off hundreds of people to announcing new alliances every six months or so.

Ruby makes the presumption that developers are only interested in the NEXTSTEP platform itself, and that they will (and should) adapt in whatever way necessary to the vagaries of the platform. This misses the point. RightBrain Software developed software for people, for users. We are not technology junkies. It is ridiculous to assume that the correct thing to do is follow all of the twists in the NeXT highway system because it is the One True Way.

It is perhaps true that we could have "adapted" to NeXT's new focus, but that sort of assumes that all we really want to do is to program NEXTSTEP and that we'll blindly follow wherever the path leads. Ruby writes that I "stubbornly stuck to the mainstream vision until reality forced [me] to pull the plug." Well, what I really did was to try to finish what I started, to deliver PasteUp, fix the bugs, support my customers, and develop new products. It is true that we pulled the plug because of reality, but that reality wasn't forced on us – it was a choice.

We were still seeing strong sales of PasteUp the day we ceased operations, and, if that were not the case, I seriously doubt that Anderson Financial would have acquired PasteUp. It

wasn't clear to me that the NeXT market had made any progress in the three years I had been involved in it, and I wasn't interested in finding out the hard way. If my goal in life were to program NEXTSTEP, then sure, I could have survived spotty sales and paid bills by doing contract programming for a bank or developing mission-critical ObjectWare for the CIA. But that was never my goal.

Nor is it Software Ventures' goal, nor Adobe's, nor WordPerfect's, nor Frame Technology's, nor Lotus's, nor any of the many developers who have made brief appearances in the Product Catalog over the years.

It is difficult enough to plot NeXT's path looking backwards through time, and I submit that it's impossible to chart it into the future. NeXT doesn't even know where it's going, and when it does know, it always springs it on the rest of us as a series of surprises, some of which are extremely difficult to adapt to quickly (like the demise of its hardware line). My crystal ball was filled with tule fog like the Central Valley of California, and I decided to pull off the I-5 to avoid the possibility of a 100-car pileup (to stretch the analogy a bit).

I also found it amusing to read that "both companies will miss the coming wave of third-party software sales." This wave has been coming for several years now. I think it's just rhetoric. If you look at the measurable phenomena, you can see a large efflux of high-visibility developers, an influx of small unknown developers, and, on the good side, an increase in the installed base. Of course, we don't know exactly what the increase is, only that it "exceeds expectations." And we don't know what percentage of the installed base will be buying third-party applications. It's all theoretical: "It's gonna be great," with the emphasis on "gonna."

I don't know whether the NEXTSTEP software market will increase, and neither does Ruby. I chose to get involved in something more predictable,

more rewarding, and less of a roller coaster. Currently, I am developing publishing software for Windows and the Macintosh, and I was very surprised to find that I can produce working software very rapidly. NEXTSTEP is great, but you know what? It's not that much better than the Mac. Besides, even if NeXT realizes its goal of 100,000 units in 1994, that will still be 100 times smaller than the Mac market, and 500 times smaller than the Windows market.

NeXTWORLD might recall that, for many months, the number-one position on its own Ten Most Wanted list was a page-layout program like QuarkXPress. That is what I set out to deliver. It took only about two years, which is pretty quick development for

a product like that, but, by the time we finished, the market had completely changed, and publishing was not a part of it any more. And now I pick up *NeXTWORLD* only to read my own epitaph (which I can assure you is premature), and to read that the reason we are among the "dearly departed" is that we did what you thought we should have done a couple of years ago, namely develop a shrinkwrapped page-layout application.

In summary, you paint a picture in which we made a lot of strategic mistakes and stubbornly refused to accept the changing market. I'll concede that we didn't accept the changing market, but it wasn't stubbornness: It was good business sense. When NEXTSTEP software development grows from a religious passion to a smart business pursuit, maybe you'll see some of us again. Meanwhile, I'll be thumbing through the pages of *Inside Macintosh* and spending more time with my dogs.

GLENN REID
RightBrain Software
Woodside, California

Shame on whom?

I hope Randy Adams and Glenn Reid understand that the shame of Dan Ruby's December editorial is on Mr. Ruby himself, not them.

JOHN LINK
Kalamazoo, Michigan

API SOS

When I saw NEXTSTEP and started using the programming tools, I thought, "This is how I want to program." When I read that APIs are not standard on most NEXTSTEP software, I thought, "What is the point object-oriented software if you don't pass on the benefits to the user?" I am one of those customers who, as Simon Garfinkel described in "Good Morning, Sarajevo!" (*NeXTWORLD*, November 1993), "aren't even considering your programs, because they can't see how to mold it into the corporate future they're building." But note that in your reviews, you don't mention if programs have a well-documented API. A good API is one of the most important things for me when looking at what software to buy for NEXTSTEP. This applies to all applications, from project managers to games. So for Ten Most Wanted – well-documented APIs in applications.

GRANT MORGAN
Tokyo

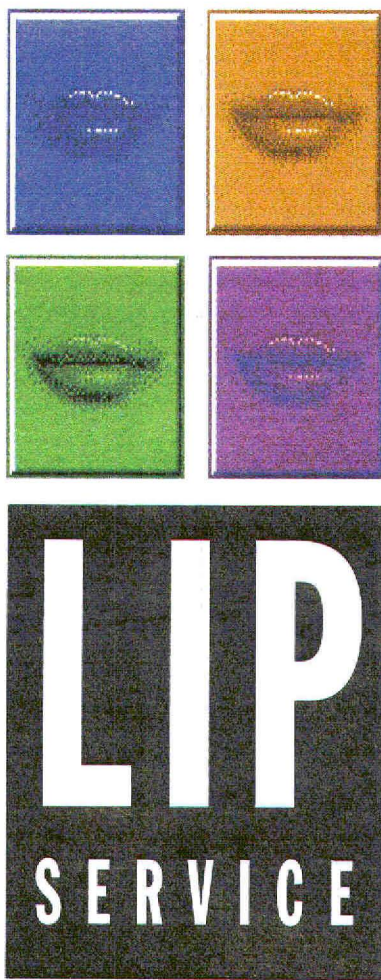
That's two Scotts and Two Duanes

Thanks for the mention in the "Three Scotts and a Duane" article in the December issue. It gave me a warm fuzzy feeling, but . . . Scott is my middle name. My first name is Duane. So perhaps I suffer under a double-whammy in the comp.sys. next news-groups!

SCOTT HESS
Burnsville, Minnesota

Editorial direction

I'd like to add a voice to the contingent that thinks *NeXTWORLD* should be more careful with negative press. There are several potential customers



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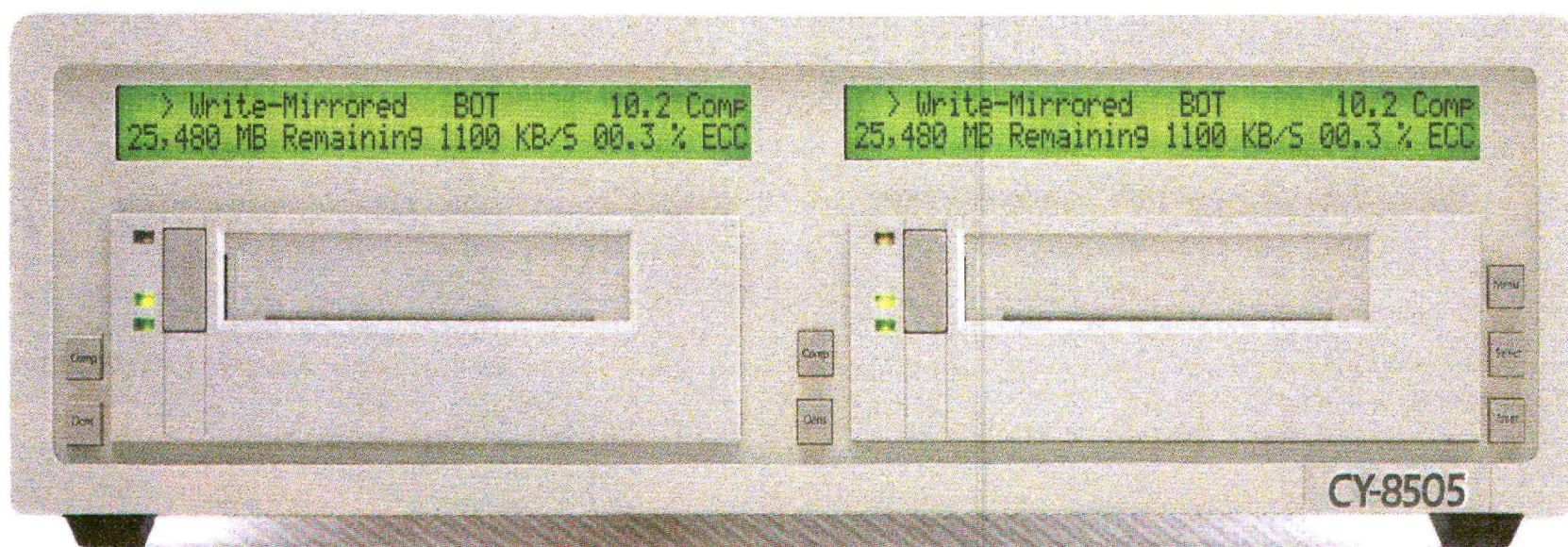
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Lip Service

for whom I would just buy a subscription to NeXTWORLD; I instead find myself forced to edit the material, or worse, not use it at all. Is it that important to thump your chest and say you're relatively impartial? At this stage, I would think the role of advocate would be far more important.

ALAN FRABUTT
Dearborn, Michigan

If we confined ourselves to happy talk, we would lose credibility with our readers. NeXTWORLD makes no bones about being partisan towards NEXTSTEP, but we are not a marketing arm of NeXT. We aim to serve our readership by covering the challenges, as well as the benefits, of using NEXTSTEP. - NW

Barlow reads minds!

I read with great amazement John Perry Barlow's recent columns ("Homer on the Range," NeXTWORLD, November 1993, and "NeXT and the Single Guy," NeXTWORLD, December 1993). In some weird way, he captured some of my deepest feelings. He came so close, in fact, to my

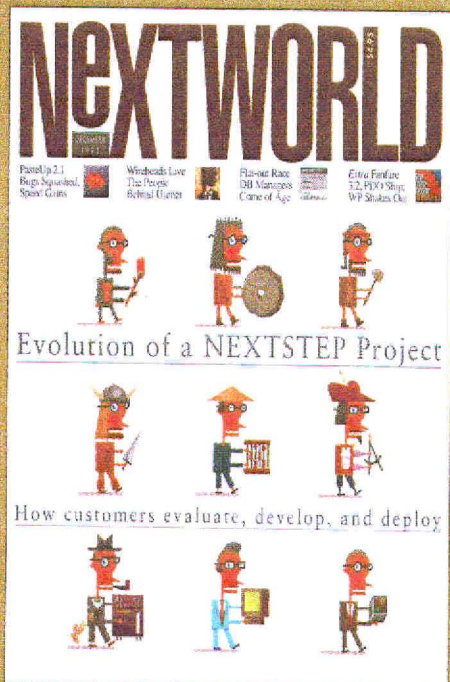
inner thoughts that I began to wonder if we were the same person - but then I remembered that I don't own a smoke shovel. If by some chance he wrote those columns to be directed toward a statistical/sociological approximation of the average NeXthead, please don't tell me: I shudder to think I might be average.

CHRISTOPHER NAGEL
Philadelphia, Pennsylvania

For the record

The DiskMaker review on page 38 of the December 1993 issue sports an incomplete e-mail address. You can contact SmartSoft either at smartsoft@parsec.mixcom.com or info@smartsoft.com.

NeXTWORLD welcomes your comments. Please mail them to Letters at NeXTWORLD, 501 Second St., San Francisco, CA 94107, or e-mail them to letters@nextworld.com.



Genre crossing

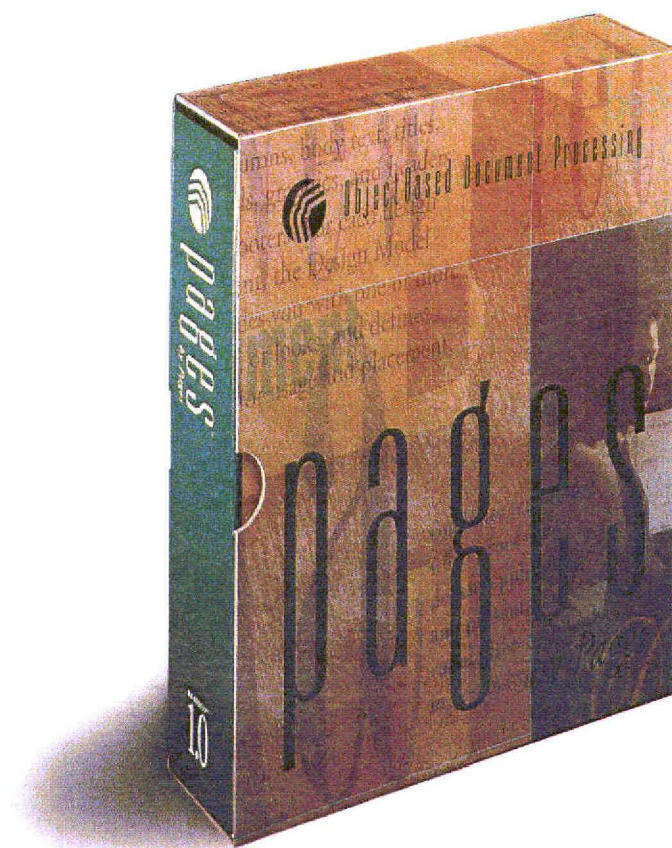
The following poem was inspired by NeXTWORLD's December 1993 cover art, which showed a whimsical view of the evolution of how information managers have moved from the Stone Age to the multi-threaded present.

Next Steppe

This is where the Renaissance begins
where the test pattern dissolves
into a picture organic
with applications
serving a multitude of users
in honor of the mainframes
whose majesty should not be
forgotten
in rooms of corporate power
Outwardly from the nine seas
we ventured
with sextant and chart
until our destiny manifests
no abacus could count
in honor of Alexander the Great
whose face rendered
haunts for the world
The object was survival
when stereoscopic mastodons
ran through caves
those dark icons
of memory and myth
in honor of the first inventor
who in the fire
discerned the codicil

DAVID ERIKSON

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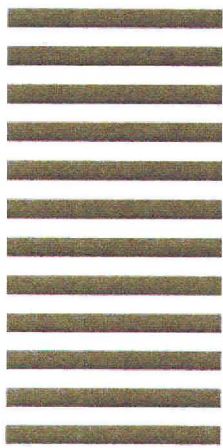
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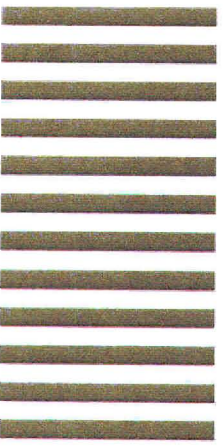
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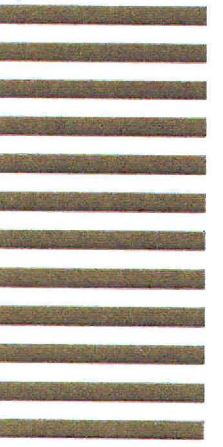
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Managing Training

THE GREAT THING ABOUT INTRODUCING PROGRAMMERS TO NEXTSTEP IS that its style of object-oriented programming is such a fresh and powerful departure from traditional computing environments. Of course, that's the main difficulty as well.

"People always hear that once you learn the NEXTSTEP programming environment, you're able to build applications more quickly and efficiently than in other environments," says David Besemer, principal of Besemer & Associates, a NeXT certified training partner in Boulder, Colorado. "But what isn't always said is that the learning curve to get to the point where you're building programs is very steep. It's a rich environment. There's a lot to learn."

"Our developers had strong Cobol skills, limited C background, and virtually no background in object-oriented techniques," says Don Winn, a senior analyst who coordinates information-technology training at Pan-Canadian Petroleum in Calgary, Alberta. Under NEXTSTEP, "they felt like they went from being expert Cobol programmers to suddenly not knowing anything."

The NEXTSTEP learning process can take as long as two or three years before substantial results start to become evident, according to an estimate by the director of training at a major NEXTSTEP shop.

"I've seen customers disabled because they didn't get sufficient training – not in NEXTSTEP, but in object-oriented techniques," says Jan Tyler, head of services marketing for NeXT. "Customers have to be made to realize that it requires education to get the full benefits of object programming."

NeXT realized this early on when it opened its first Dev Camp, the five-day course it runs at its facilities in Chicago and Redwood City. At \$1800 a head, the company provides instruction tracks geared toward various student populations – end users, application programmers, system administrators, and NeXT technical-marketing partners. For organizations that want to train a lot of people, NeXT will set up a private, on-site Dev Camp for \$15,000.

In June of last year, NeXT introduced its mentorship program, which is similar to programs created by third-party consultants. Approaches vary, but the basic tenet of mentoring is to replace book learning with hands-on, guided apprenticeships. "You really won't be successful until you have at least two object-oriented development efforts under your belt," says Joe Ortiz, product marketing manager for Pencom Software, an Austin, Texas-based NEXTSTEP training partner. "There's a difference between reading articles and actually doing it."

NeXT's new mentoring programs are tailored to cleave closely to the application needs of the customer's organization. After closely studying these needs, NeXT crafts courses and exercises that will generate at least a portion of the prototype of the real app. NeXT consultant-teachers are available at the site for 25 to 30 days during a 10- to 14-week period, according to Tyler. If this mentoring program sounds good, it ought to: NeXT charges \$100,000 for it.

Whether you're interested in a mentoring arrangement or more standard classroom instruction, NeXT itself is not the only option. To ensure high-quality training from third-party providers, NeXT has established a network of Certified Training Partners across Europe and North America. Many offer both on-site and off-site training arrangements.

COMMUNITY

Real World/Issues and Answers
in NEXTSTEP Implementation

But the instruction that NeXT and its training partners offer won't do for everyone. Some organizations have chosen to develop their own curriculum. One of the most elaborate in-house training programs in the NEXTSTEP world is going in Winn's training department at PanCanadian.

When the company's IS managers sat down to design a NEXTSTEP curriculum more than a year ago, Winn and his colleagues came up with a long list of criteria – goals they wouldn't have been able to achieve if they'd used third-party trainers or sent their people to NeXT's Dev Camp. For example, they wanted to bring their programmers, user customers, and system administrators along quickly, but with a proper introduction to the concepts of object environments.

Also, they wanted a system of modular courses that would provide breaks, during which programmers would apply the concepts they'd learned, before returning for subsequent, more advanced course modules.

But most importantly, PanCanadian wanted ownership of its training process – again, something that would have been difficult or impossible if it had brought in third-party trainers or gone to NeXT.

Since the courses were developed by PanCanadian's IS department, the firm had the freedom to design course work that was relevant to the company's specific business needs. "That way, the training took on a whole different level of relevance," says Winn.

For the first year or two of its entrance into the NEXTSTEP world, Swiss Bank Corporation (SBC) brought in many outside consultants to teach classes for developers and sent many programmers to Dev Camp, according to Joe Troccoli, director of the education department at the Chicago-based financial trader. But now, with a critical mass of in-house expertise, the firm relies more on a kind of grass-roots approach to transmitting NEXTSTEP knowledge to new hires. "New people are pretty much trained right in the department," Troccoli says.

Most trainers also face the task of instructing nonprogramming end users. The hard part for SBC was finding the best time to deliver instruction to traders and others who are tied to market hours. So SBC made videotapes that provide instruction in some basic NEXTSTEP applications – Wingz, NeXTmail, WordPerfect – that the traders could watch after trading hours.

Training managers like Winn and Troccoli recognize that one of the defining characteristics of working with NEXTSTEP is that the first two years of a firm's experience with it are a critical time. Programmers, administrators, and users aren't just getting an introduction to NEXTSTEP; the entire organization is getting introduced to NEXTSTEP and object-oriented programming. Like individual people, companies and systems learn and evolve, and managing that evolution is an important part of the trainer's job. ♦

by PAUL KARON

Real World is a continuing series that looks at the nuts-and-bolts issues of implementing NEXTSTEP solutions in large organizations.

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ENERGY CUSTOMER

Companies moving to NEXTSTEP have a lot of ground to cover, but maybe none more than PanCanadian Petroleum, the second-largest oil and gas producer north of the U.S. border. According to Stephen Wyatt, manager of information systems, "we're a manufacturing company with a production floor of 500,000 square miles." That's an area larger than Montana, Idaho, Wyoming, Utah, and Colorado combined.

PanCanadian has close to 1400 employees and 400 consultants spread among its Calgary, Alberta, headquarters and seven regional offices in Alberta and Saskatchewan. With almost 400 of those workers responsible for covering huge territories, "their truck is really their office," says Roger Coates, coordinator of technology management. The firm needed to find ways to improve information flow, but simple networking wasn't the answer.

PanCanadian users and the IS staff met last year and put together a SITE (Strategic Information Technology Expectations) study. The report identified 30 software applications that are important to PanCanadian's continued technological growth, but it also emphasized NEXTSTEP's ability to change the way people work. "We need-

ed to integrate information from various sources, so our focus has been aimed at assisting professionals to be more productive, rather than automating clerical work," Coates says.

With an estimated five-year development cycle for the applications, Coates explains, the IS staff was looking for a development environment that "had legs and would be current when we finished." They settled on NEXTSTEP because Objective-C has "the horsepower to handle difficult problems" and purchased 65 black boxes. PanCanadian currently has almost 100 black and white NEXTSTEP machines (having settled on the Compaq Deskpro 66M Intel box after evaluating several offerings) and plans to deploy 500 seats by the end of this year.

With support from company executives, especially new CEO David O'Brien, the IS team has deployed or is finishing up its first six appli-

cations: a management system for gas marketers; software to catalog and study potential drilling areas; a gas-allocation application; a package to analyze fluid corrosiveness; a second gas-marketing app; and a system for cataloging "best practices" metrics about successful methods used in various projects.

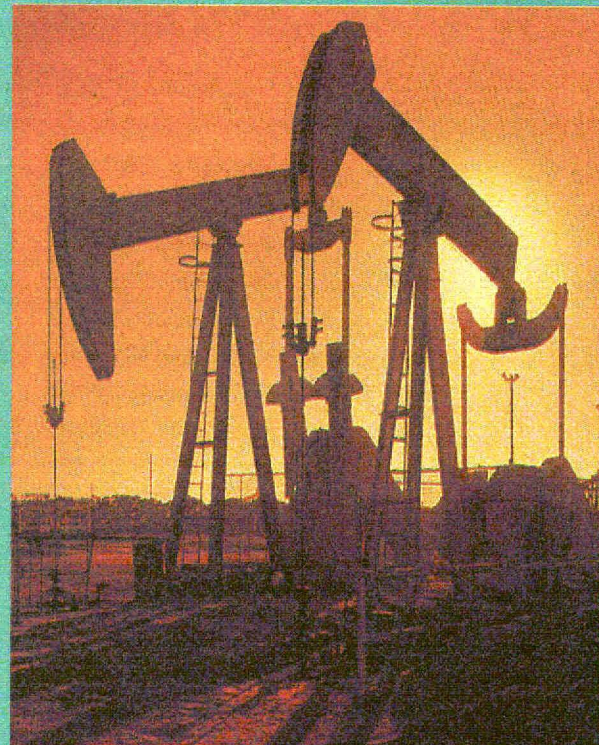
This last package is significant for improving the information flow between field workers and headquarters. "Field people have traditionally been guys in overalls who carry wrenches to open and close taps and repair equipment. We want them to have an understanding of the business implications of what they do. They drive the cost of a barrel out of the ground," says Wyatt.

By coordinating production and business information, field supervisors can more effectively schedule workers, operate or shut down

wells, and perform plant maintenance.

Currently, field workers send and receive information over T1 lines from district offices to headquarters, which has been wired with a fiber-optic backbone. PanCanadian is evaluating NEXTSTEP laptops for future deployment.

The success and executive support of the new development efforts have solidified



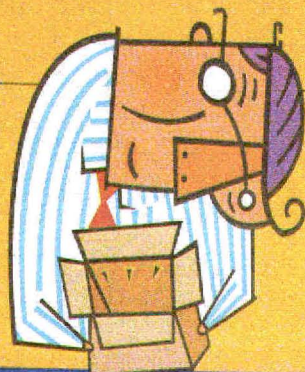
PanCanadian uses NEXTSTEP to pump information from the field to headquarters.

the company programmers' break with writing code for PanCanadian's old IBM 3090 mainframe, which relied on IDMS and CISC-Cobol. "When you have to face objects, you have to think differently, and you wind up with an event-driven, client-server environment," Coates says.

A significant part of that environment has been the firm's 80 Sun SPARCstations. "Sun just about owns the technical-application market in this industry," Coates says. The November announcement between Sun and NeXT will allow PanCanadian to integrate the technical side of its business into the SITE plans.

"We use a lot of third-party apps for seismic interpretation and reservoir simulation. Those kinds of apps are very compute-intensive, and the algorithms are very specialized, so we have to buy a lot of these kinds of applications. We'll be encouraging vendors to port

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their apps to a Sun-based OpenStep environment," Coates says.

Even though the announcement was unexpected, the IS staff had been planning for it by focusing development efforts over the last year on building an "object infrastructure," Coates explains. If the SITE plan had merely relied on mission-critical custom-application development, integrating the Solaris-based technical side of the business, even with an OpenStep backbone, would have been difficult.

The idea was to take advantage of what lies behind NEXTSTEP, rather than just the development environment. "Our approach to implementation is to drive for reuse by building object libraries. In parallel with the six applications, we're building libraries of reusable parts of the apps," Coates says. This will bring

PanCanadian's geologists and other scientists into the same operational systems with accountants, managers, and field workers.

"Communication is a serious issue," Coates explains. When organizations deploy NEXTSTEP, the success or failure hinges on realizing that they are deploying more than just software or hardware — they are implementing a new technology, with new ideas that can cover a lot of ground. "The applications people needed to work better made them think differently," Coates says. "And it turned out that everybody wants to use the new tools." ♦

by ELIOT BERGSON

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Break the Mold

COMMENTARY

While native NEXTSTEP applications remain important to NeXT's large corporate customers, the playing field for NEXTSTEP ISVs (independent software vendors) has clearly changed now that Insignia Solutions' SoftPC provides a viable solution for running standard commercial applications under Windows. With this change in the market, ISVs must reexamine strategies that may have been successful in the world of NeXT proprietary hardware but may no longer be successful in the larger NEXTSTEP for Intel world or in the future OpenStep world.

When my company, Information Technology Solutions (ITS), started developing NEXTSTEP software in 1991, we saw an opportunity in the black-hardware market to provide basic productivity applications, which are commonly available in the PC and Windows world, as native NeXT applications. This strategy worked out well, allowing us to ship several useful (though not groundbreaking) commercial applications in 1992 and 1993. Now, instead of buying ITS's simple information organizer for NEXTSTEP, NeXT customers may rush out and buy some Windows application and use it under SoftPC.

Some NEXTSTEP ISVs are worried about the competition for customer dollars that will come from Windows applications. Instead, we look at the availability of these mainstream commercial applications as being absolutely critical to the success of our company - because

their availability is crucial to the success of NEXTSTEP. But how do we turn this potential threat into an opportunity?

Instead of viewing itself as a provider of useful productivity applications in a small market niche, a NEXTSTEP ISV must provide breakthrough ideas in software design, software packaging, and the concept of what makes up a commercial software package. NEXTSTEP software must differentiate itself from the pack by leading the entire software industry in a new direction, rather than by adding a few bells and whistles.

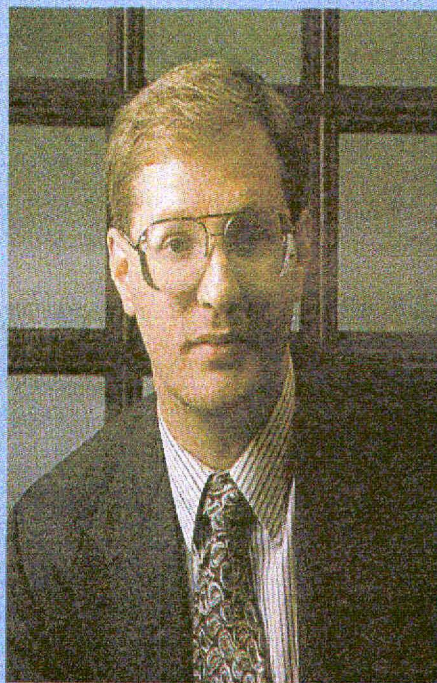
SoftPC has often been thought of as providing access to legacy applications, providing companies with a method for transitioning from Windows-based environments to NEXTSTEP-based environments. But the term *legacy* means "something from the past." It emphasizes an old paradigm for commercial software.

SoftPC will allow NEXTSTEP to gain a wider acceptance in *Fortune* 1000 companies precisely because these companies will be able to use their existing commercial productivity applications. But companies will not want to simply run the same applications in a native NEXTSTEP environment without having to use native NEXTSTEP versions. The next revolution in commercial software will occur as developers move away from an application-centric model of software toward an object-centric model. And here NEXTSTEP ISVs must lead the way.

Think about it. Why should I be constrained to using one application's drawing tools, another application's painting tools, a third application's writing tools, and then have to paste the results together (in a fourth application!) to send these components to a colleague? This is the old application-centric model of commercial applications. Instead, using an object-centric model for commercial software, I should be able to use all of these tools on the same document, which could then be sent directly via e-mail. ISVs need to strip down their applications into object libraries that other developers, and even end users, can put together any way they want.

Native NEXTSTEP applications can no longer simply be useful duplicates of applications already available under Windows. In the future, ISVs will have to clearly differentiate their products from standard Windows applications. Here are a few ways to do this:

- *Network workgroup applications.* Use the power of NEXTSTEP and UNIX to extend your applications to allow groups to communicate better; UNIX excels over DOS in this area. And make sure your solutions are scalable so that hundreds, or even thousands, of users can make use of the applications.



ITS President and CEO Ted Shelton

PHOTOGRAPH BY KAREN HIRSCH

Cogito, Ergo Sun

ON THE NET

THE SUN ALSO RISES. TRAFFIC CENTERED AROUND the Sun/NeXT alliance. One bird crowed (much too coyly) prior to the announcement; others in the know (and craving less attention, perhaps?) honored both spirit and letter of their nondisclosure agreements. Post-announcement speculation ran rampant: Was this "another desperate move" on NeXT's part, or a brilliant coup and resounding vindication of Steve's vision? Regardless, much consolation from the mere image of Scott McNealy wearing The Steve Outfit and holding a cube sporting the NeXT logo (with nary a sharp spike anywhere near his eyes).

What's it all about, Alfie? Major questions remained unanswered. Will OpenStep include all of the development tools of NEXTSTEP? Will OpenStep run as a layer on top of X? If so, how will it handle Display PostScript? Or will X simply be supported under OpenStep, as it is now under NEXTSTEP? Will OpenStep include drag-and-drop objects? Ultimate question: From a user's perspective, what difference will there be between running native NEXTSTEP on a SPARC and running the OpenStep version of Solaris?

Most agreed that OpenStep will benefit from Solaris's "industry-strength kernel," and that the publication of an open spec will lead to much greater acceptance of NEXTSTEP technology, taking it out of a "niche market" classification. To ensure success, NeXT's most critical task is to exhaustively document the OpenStep spec within the announced time frame (by June).

Speculation and suggestions for other ports ran toward, "Do this one! No, no, do this

one!" Cooler heads suggested that NeXT has plenty of work for its (newly lean) staff to handle, and that getting a solid HP PA-RISC port out the door is critical, if only to establish credibility: "We don't need a list of *promised* platforms for NEXTSTEP, we need a list of *shipping* platforms for NS."

Now is the winter of our discontent . . . The profound changes that the Sun alliance portends brought out a metaphysical streak in many posters. In various threads, the relative merits of NEXTSTEP, Motif, Mach, and Windows (and TECO) were debated. Some posters power shifted from bashing Intel hardware to bashing Sun hardware; the thread then evolved into debate re: merits of straight CPU benchmarking. Much discussion of what platform was (or would be) most preferred by posters' mothers for writing doctoral theses.

We happy few, we band of brothers. "Will Mark Crispin ever be cheerful?" gets the Subject Line Sez It All prize for the month. All you doom-and-gloomers out there, take heart. Remember, on St. Crispin's Day in 1415, Henry V defeated the French at Agincourt, successfully using superior technology (the English longbow) against a vastly larger enemy force.

Balanced against the doomsayers were the courageous souls who sought information re: how to buy NeXT stock. (It can be had from employees current or former, but NeXT has right of first refusal.)

We miss you, Conrad. NeXT community members, some accustomed to receiving an average of three messages per week from Conrad, bemoaned the deafening silence emanating from Redwood City.

by STEVE FRICKE

- **Object libraries.** Provide object libraries with your applications to allow corporate customers to reuse your software in their own internal applications. Mission-critical applications will continue to be part of the competitive advantage that companies buying NEXTSTEP will enjoy. Make your products part of this successful strategy.

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TED SHELTON is president and CEO of Information Technology Solutions, a Chicago-based company delivering NEXTSTEP solutions to the financial-services community.

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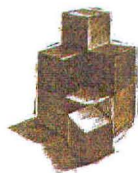


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CubX-Window • Run Time • DataPhile • DBInspector
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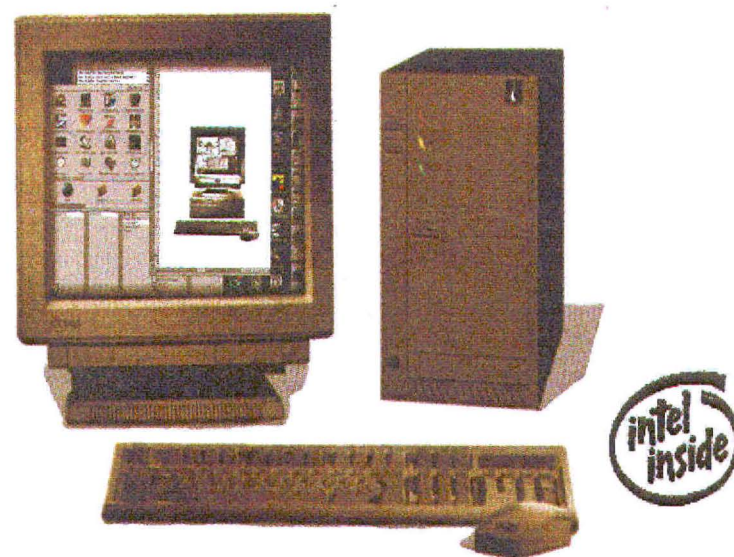
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EXTRA

NEWS
IN BRIEF

Black & White Software is now shipping NXFax 1.04. Along with the addition of NEXTSTEP for Intel functionality, the Best of Breed award-winning fax-data software now also supports more modems. NXFax costs \$135; complete modem and software packages start at \$470. Black & White: 802/496-8500; nxfax@bandw.com.

Zion Software and Consulting in December released TeleComm 1.01, its fat-binary telecommunications software. The app includes capabilities for serial-modem communications and file transfers using X-, Y-, and ZMODEM, and VT100 terminal emulation. TeleComm also sports terminal-emulation and file-transfer APIs for custom data handling. Users can find demo copies of TeleComm on cs.orst.edu, or purchase copies directly from Zion or the *Electronic App Wrapper*. It costs \$89 or \$45 educational. Zion: 203/659-4257; info@zion.com.

Thoughtful Software has announced a new prerelease version of HyperSense, its fat-binary NEXTSTEP authoring tool for multimedia documents and applications. The prerelease version costs \$299, while Version 1.0, due to ship in Q1 of this year, will sell for \$499. Purchasers of the prerelease version will receive the shipping product for free. Thoughtful: 303/221-4596; info@thoughtful.com.

Walnut Creek CD-ROM in December shipped its *Nebula* CD-ROM for NEXTSTEP Intel computers. The disc contains applications complete with source code, graphics, fonts, and sounds. *Nebula* retails for \$59.95. Walnut Creek: 510/947-5996; info@cdrom.com.

Paget Press also shipped its newest CD-ROM, the *Electronic App Wrapper* Edition 4. The new disc features a new database engine for faster searches, new music, [CONTINUED ON PAGE 17]

Lighthouse snares code for expanded app suite

by DAN RUBY

San Mateo, CA – Lighthouse Design went on a buying spree in December, snapping up two orphaned products from now-defunct Appsoft and an image-processing package from Pinnacle Research. But it remained unclear at press time how or even if Lighthouse would use some of the acquired technology.

The acquisitions included the unfinished code for Appsoft Solution and Appsoft Write, although Lighthouse President Jonathan Schwartz stated flatly that the company has no interest

in pursuing the NEXTSTEP word-processor market. Lighthouse could use some of the Write code in future releases of existing products, he said.

Schwartz also declined to commit to plans to publish Solution or any spreadsheet, though he noted that "the market is still wide open for a good traditional spreadsheet." Athena Design's Mesa spreadsheet is the current market leader in that category.

A separate agreement between Lighthouse and Borland International, owner of the PowerStep code on which Solution is based, [SEE LIGHTHOUSE, PAGE 15]

HP station to set mark

by DAN LAVIN

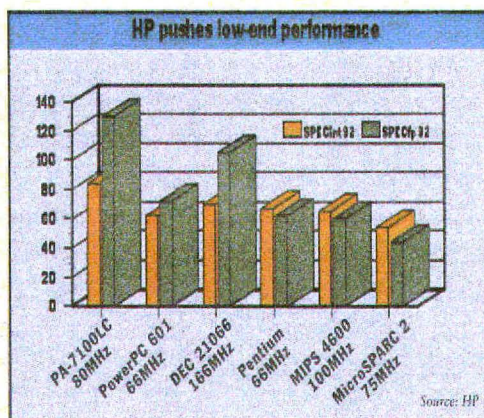
Hewlett-Packard's new low-cost Model 712 workstation will set a price/performance standard for NEXTSTEP when NeXT's PA-RISC port is finished later this year.

Starting at under \$4000 list price, the Model 712 will compete with entry-level offerings from Sun and SGI, and with high-end Intel 486- and Pentium-based computers. The base model will sport 16MB of memory, 260MB of disk, and a 15-inch color monitor for \$3995.

It is based on a new version of the HP PA-RISC design called the 7100LC, which offers superior performance to competitive RISC and CISC processors, according to HP test results. The company also announced a low-cost server line based on the new chip and outlined future strategy for the PA-RISC chip line.

"We are moving aggressively into the commercial space," said Pierre Bouchard, product marketing manager for HP's workstation

group." We are aiming this line at information-systems departments that need shrinkwrapped applications, a rich operating-system environment with network management, [SEE HP, PAGE 17]



Dell gears up NeXT line

by DAN RUBY

Austin, TX – One of NeXT's earliest supporters among Intel-systems manufacturers is geared up to ship NEXTSTEP preinstalled on a line of four hardware platforms.

While Dell computer has previously filled orders for NEXTSTEP on its JAWS-based DGX

Object war escalates

by DAN LAVIN

00 milestones

Q1 1994

Beta of Taligent tool kits

April 1994

Release of OpenStep timetable

Mid-1994

Release of OpenStep specification NEXTSTEP for PA-RISC ships

Late 1994

NEXTSTEP for SPARC ships Beta of Microsoft Cairo

1995

Taligent tool kits ship Solaris with OpenStep ships Microsoft Cairo ships

1996

Taligent developer system ships Taligent operating system ships

This time line is based on public statements about future product deliveries from the companies involved.

San Francisco – One week after NeXT and Sun announced their OpenStep alliance, Microsoft and Digital Equipment Corporation (Digital) raised the stakes with a move to make their own object systems interoperable.

The two announcements are indicative of the shifting industry alliances as all the major hardware manufacturers and operating-system suppliers prepare for the transition to the object-oriented applications environments of the future (see time line).

"The whole industry is jockeying for position in this space because all the money to be made in developing software in the future is at stake," said Chris Stone, CEO of the Object

Management Group (OMG), a standards organization.

Under the Common Object Model (COM) [SEE WAR, PAGE 17]

GS spearheads grass-roots coalition for publishing

by PAUL CURTHOYS

In what may be a robust reincarnation of the defunct NeXT Publishing Environment, GS Corporation is spearheading a coordinated effort to once again promote NEXTSTEP technology as a publishing

solution for professional designers.

Supported by NeXT and other third-party developers, GS has developed partnerships with Linotype-Hell, Epson America, Canon and its resellers, and MicroAge to create an alliance that will market NEXTSTEP publishing solutions.

"We came to NEXTSTEP to do publishing products," said Lauren Flanagan, president of GS Corporation, "because it has real, technological advantages."

After NeXT's initial surge of interest in publishing faded, Flanagan decided that the "only way to capitalize on this market was to do it ourselves."

To enter that arena, GS developed a partnership with Linotype-Hell, a company known for its state-of-the-art prepress equipment. In what [SEE PUBLISHING, PAGE 15]

Expanded driver support

Redwood City – NeXT is currently developing a new set of drivers to complement the driver offerings in NEXTSTEP 3.2. Although the new drivers are scheduled to be available in the first quarter of this year, no firm ship date had been set at press time, according to Bob Lawton, Intel product manager at NeXT. Lawton added that an additional 32-bit EISA Ethernet adapter is also under development.

Card	Expansion bus
Graphics	
ATI 68800 AX	VL-Bus, PCI
Tseng Labs ET-4000 W32i	VL-Bus
STB Pegasus-VL for S3-928	VL-Bus
Diamond Viper-VL for Weitek Power 9000	VL-Bus
Number Nine GXE-VL for S3-928	VL-Bus*
SCSI	
Adaptec 274x	EISA
Bus Logic 445S	VL-Bus
Local area networks	
IBM Token-Ring 16/4 Adapter	ISA

*4MB version (2MB version supported in 3.2)

Source: NeXT

by PAUL CURTHOYS

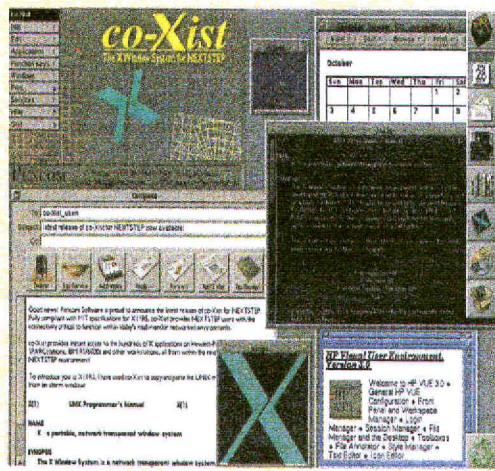
co-Xist boosts speed

by PAUL CURTHOYS

Austin, TX – Pencom Software in December shipped co-Xist 3.2 for NEXTSTEP for Intel, which provides a NEXTSTEP implementation of the X11R5 Windows System. With co-Xist, NEXTSTEP users can display X Window applications that are running on other machines in their network, furnishing access to applications that usually appear on Sun, HP, IBM, or DEC workstations.

Engineers can also utilize co-Xist's development environment to port NEXTSTEP apps to X Window sor to develop X Window apps using NEXTSTEP machines.

New features in this updated version include substantial performance improvements, a GUI-based



co-Xist 3.2 offers expanded connectivity to X Windows.

installation process, and greatly expanded graphics-card support. "We support all of the graphics cards that NeXT does, plus some that they don't," said Matthew Waters, who handles product marketing and sales for Pencom.

The package costs \$195; educational discounts and expanded developer versions are available. Pencom Software: 512/343-6666, 800/736-2664; co-Xist_info@pencom.com. ♦

Lexar joins Intel fray

by DAN LAVIN

Lexar Open Systems has joined the group of manufacturers specifically configuring and marketing computers for the NEXTSTEP market. Lexar's prime differentiation is its upgradeable bus, using what the company calls Anybud technology, in which VESA Opti and PCI Localbus architectures are interchangeable.

Lexar showed machines running NEXTSTEP at Comdex in November. The company does not sell directly to end users but works instead through resellers and VARs. Both Alpine Computing of Salt Lake City, Utah, a reseller; and VTLS, a vertical reseller in the library community, have announced that they will carry the Lexar NEXTSTEP-specific products. ♦

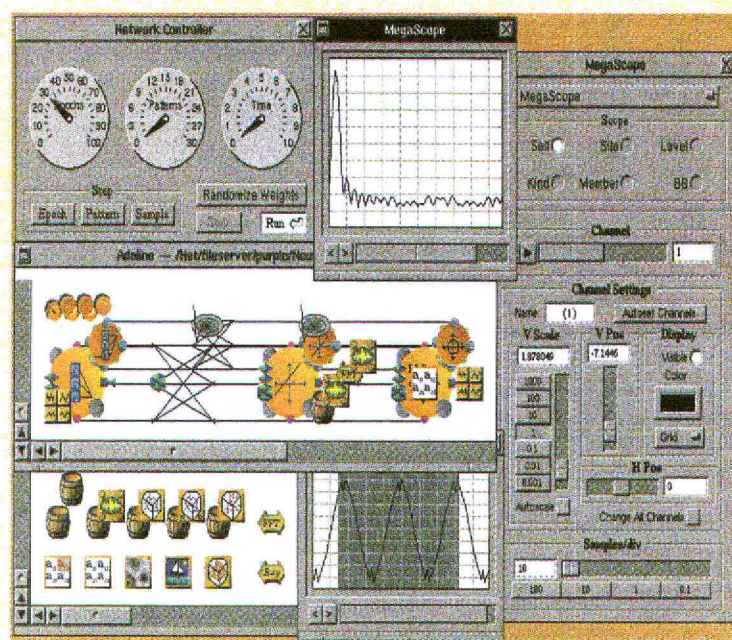
Neural net models choices

by DAN LAVIN

Gainesville, FL – NeuroSolutions, a neural-network application environment for NEXTSTEP, began shipping in December from NeuroDimension. The product differs from neural-network programs on other platforms by adding drag-and-drop capabilities and dynamic simulations of problems.

"Their NEXTSTEP environment made it possible for us to introduce a revolutionary product in terms of power and ease of use," said Dan Lawrence, marketing director for NeuroSolutions.

Neural networks attempt to mimic human brain processes to provide computer solutions to problems that normally require human insight. Users build a decision-making framework and feed in their data; the neural-network frameworks then change in response to the data, and in effect, learn, giving sophisticated feedback.



NeuroSolutions differs from competitors because of its graphical representation of both static and dynamic simulations.

Besides ease of use, NeuroSolutions enhances the standard neural-network model by being among the first to support dynamic simulations in addition to traditional static simulations.

Through dynamic modeling, users can model more complex data sets, like voice patterns, that change over time.

There are a wide variety of

applications for neural networks, many of them in NEXT's core markets like financial services and medicine. "One of our problems is that there are so many applications for the technology," said Lawrence.

The product costs \$2495 for the user system and \$6495 for the developer version. NeuroDimension: 904/377-5144. ♦

WhiteLight nabs bugs

by DAN RUBY

Palo Alto, CA – Shipping bug-free software is easier in an object-oriented environment than with traditional programming tools, but software-quality assurance is still a problem for NEXTSTEP developers. Now they can identify and eradicate bugs faster using CrashCatcher from WhiteLight Systems, a nonintrusive run-time utility for Objective-C debugging.

CrashCatcher generates detailed reports on crashes and non-fatal exceptions. Besides appearing on the user's screen, the reports can be routed through e-mail, making it especially useful during the beta-testing phase of development.

CrashCatcher ships with an intentionally buggy version of Mission-Critical Solitaire, a card game for NEXTSTEP that WhiteLight also sells as a finished product.

"Most people don't know that Solitaire is the app most used on Windows. Now NEXTSTEP does everything better than the Microsoft product," said Norman Goldfarb, WhiteLight's CEO.

CrashCatcher is priced at \$749 per developer seat. Mission-Critical Solitaire is available for \$35.

WhiteLight: 415/321-2183; info@whitelight.com. ♦

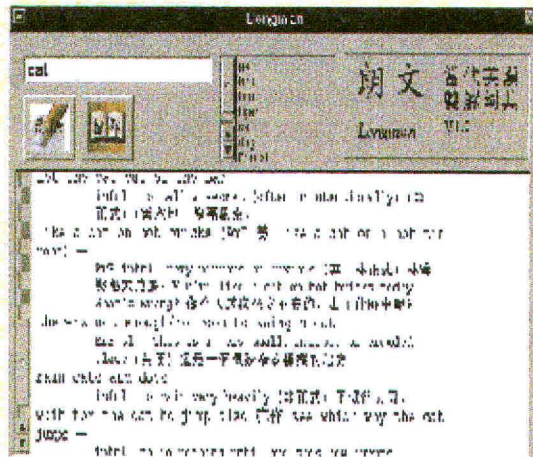
China opens to NS

by PAUL CURTHOYS

Taipei, Taiwan – Broader foreign-language compatibility has arrived on the NEXTSTEP for Intel platform with the release of CHINAware, a Chinese system that is built on top of the English NEXTSTEP version.

Produced by Jie-Fu Corporation, CHINAware includes several apps that support a variety of everyday text-editing functions using Chinese characters. CInput allows users to input text in several different input modes (including Cang-jie, Phonetics, Simple, TeleCode, and Internal Code) and can interact with other NEXTSTEP apps.

A text editor that works much like Edit, CEdit, is also included, providing support for RTF and RTFD files. Text-searching capabilities are supplied with CSearch, which lets users search for both Chinese and English characters. The package also includes five Chinese PostScript fonts and a complete Longman English-Chinese dictionary.



CHINAware brings Chinese text-editing and development tools to NEXTSTEP.

CHINAware provides Chinese development tools as well, including CTerminal, a Chinese VT100 terminal emulator; ChKit, a Chinese function-call library; and ChIBKit, a Chinese object palette and related library.

Currently, CHINAware only supports the Traditional Chinese Character set (BIG5 code set). Support for the Simplified Character set (GB code set), which is used in mainland China, is currently in the works, according to Jie-Fu.

CHINAware lists for \$995, and the educational version costs \$395 but has less functionality than the standard version. Jie-Fu can be contacted at 88/62/369-5121, 88/62/369-5120 fax; idpt353@tpts1.seed.net.tw or tchuang@cube.ep.nctu.edu.tw. ♦

Lighthouse [FROM PAGE 13]
gives Lighthouse rights to pursue development and marketing of a two-dimensional spreadsheet using the technology.

In contrast to the Appsoft deals, Lighthouse will immediately enter the image-processing market with the acquisition of WetPaint from Pinnacle Research. Schwartz said the company will ship WetPaint in its current form as a prerelease version, then release a product under the Lighthouse name later in the first quarter.

"While image manipulation may not be a huge market, there has been consistent and uniform demand for applications of this type," Schwartz said.

Among the products that compete with WetPaint is another Appsoft application, Image, that was not included in the Lighthouse deal. According to Appsoft's Randy Adams, he is close to concluding a deal with an unnamed company for the rights to Image.

Adams said that the Lighthouse and other deals represent the concluding chapter for Appsoft. "A lot of work went into these products. It's important to get them back into the community," Adams said.

Publishing [FROM PAGE 13]
Flanagan described as a "Trojan horse strategy," GS will accompany Linotype-Hell during the sales process to introduce service bureaus to NEXTSTEP publishing products.

While GS has its foot in the door, it will promote its products and those of the other alliance members, including Altsys, Pages Software, and Lighthouse Design. "We'll offer referrals and spread positive information on other products that fill other gaps," she explained.

The publishing alliance is taking a multipronged approach to promoting a NEXTSTEP presence with its other potential customers. By working with Canon and its resellers, "we'll be able to get NeXT into some big companies through the back door," Flanagan said.

In addition, GS has struck a deal with Epson and MicroAge to produce and distribute two machines with bundled software from coalition members. The packages are designed for users who want to experiment with NEXTSTEP presentation or OCR technology.

Finally, GS has developed a series of training seminars that will explore the advantages of using NEXTSTEP and Canon technology in a publishing environment.

The alliance's plans are moving along well, Flanagan said. "We have a few big clients lined up, and by January, we should be positioned to implement the plan."



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NeXT names new user liaison

by PAUL CURTHOYS

Redwood City - NeXT announced in December that it has tapped Darren Smith to replace Conrad Geiger as the communications specialist in NeXT's marketing and communications division. Smith formerly worked in NeXT's technical-support department, handling questions about Intel configurations and installation.

"I'm really excited about the position," Smith said. "I've gotten a good spin from Conrad on how important it is to keep everyone informed and some tips on how to communicate well with user groups. It was great to be in tech support helping people individually, and it'll be even better to be on the front line selling NeXT."

"We're really excited to bring

this function in-house," said Lisa Magnuson, marketing programs manager at NeXT. "Darren is responsible for communicating with the outside NeXT user community and will have the added responsibility of communicating with [NeXT's] direct-sales force."

Geiger, who lives in Seattle, was dismissed in November when NeXT decided to relocate his function to Redwood City. Because Smith works out of the main office, he will have contact with everyone who is producing the information, Magnuson explained. Smith will be able to take part in "conversations in the hallways and in cafes, and that will let us be more responsible and have a team effort," she said.

"Conrad did a great job," Magnuson added. "This is in no

way a reflection on him. We're sorry to see him go, but, at the same time, we're excited to have Darren on board."

Smith will continue Geiger's tradition of informing interested parties of the latest NeXT news and of strongly supporting user groups, Magnuson said. ♦

Dutch reseller tries ambitious marketing

by ELIOT BERGSON

De Meern, The Netherlands - If sales are directly proportional to marketing efforts, Benelux NEXTSTEP distributor IC Group should

be swamped with new customers by the summer.

The company in December released *Take the NEXTSTEP*, a compilation of NeXT corporate profiles, white papers on various technical topics, and purchasing proposals for bundling options. The book, along with third-party product brochures and a copy of the *Electronic App Wrapper* from Paget Press, was mailed to over 200 resellers, developers, and users.

The mailing came right on the heels of a seminar series that IC Group conducted with major Dutch NEXTSTEP partners and customers, including HP and Euro-card Mastercard Nederland. The seminars featured live application development; PDO demonstrations on HP 9000 and Vectra PCs; guest speakers from customer sites; and the introduction of IC Group's WORK*OO*BENCH, a custom application for managing object-oriented project development.

And through NEXTTOUCH, an interactive network-information service, IC Group is also attempting to "make professional computer users and software developers of object-oriented technology and portable ObjectWare," according to the company. Users can receive press releases, technical sheets, white papers, magazine articles, and ObjectWare solutions.

IC Group: 31/3406/212-25; dvlamings@icgned.nl. ♦

Alembic ups offerings

by DAN LAVIN

Denver - Since being named president and CEO of Alembic Systems in mid-October, John Pierce has refocused business plans and returned the company to operational profitability, according to

the company.

"Sales have doubled each month because we are concentrating on profit centers," said Pierce.

Alembic has dropped its systems-integration business and is concentrating on distributing third-party software and an Alembic-labeled Intel-based computer in North America and Europe, with a special focus on distributing to resellers.

The company carries more than 150 software applications and has sufficient resources to provide first-line technical support on all of them, Pierce said. Alembic now has 12 employees and offices in Colorado and Darby, England.

"Working with Alembic is great. We never used NeXTConnection, but we use Alembic because they are a true NEXTSTEP distributor, especially into the indirect channel," said Scott Love, CEO of Millennium Software.

Alembic Systems International: 303/799-6223. ♦


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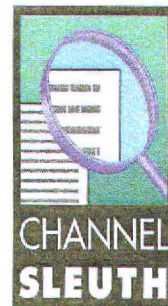
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BELL ATLANTIC SUPPORT



Less than a year after NeXT stopped manufacturing its technically advanced but poorly selling hardware, many customers still rely on existing NeXTstations, NeXTcubes, and even those rarely seen NeXTdimensions to run their businesses.

Orphaned or not, these customers are finding it difficult to match the integration, robustness, and all-around elegance of the original NeXT hardware with existing Intel configurations. If you shop around, NeXT computers can be a real bargain.

The Sleuth called Bell Atlantic, the authorized service provider for NeXT hardware, to see if NeXT was keeping its promise to provide

support for users of black hardware. The Sleuth was pleased to discover knowledgeable, extremely cooperative technicians who were ready to do whatever it takes to keep a system running, whether that means arranging for either on- or off-site service, sending out replacement parts, or selling a fully configured system.

Bell Atlantic has emerged as an important source for everything from complete systems to toner cartridges, CD-ROM drives, and NeXT ADB keyboards. Its stock won't last forever, but while it does, black hardware remains a viable option.

NeXT hardware support: 800/499-3698. Bell Atlantic: 800/345-7950.

Each month, the Sleuth will look at a different aspect of NEXTSTEP distribution.

B R I E F S
C o n t i n u e d

updated Intel product info, and an "interactive gift boutique," according to the company. Paget: 206/448-0845; aw@paget.com.

Hot Technologies has released Version 2.0 of its Bar-a-Coda application, which features a completely redesigned user interface, drag-and-drop bar codes, and support for Object Linking, NeXT services, and multiple bar-code generation. The software costs \$349. Hot Technologies: 617/252-0088; info@hot.com.

CCRMA Music Kit 4.0 is now available from the Computer Center for Research in Music and Acoustics at Stanford University. The object-oriented software system for building music, sound, signal-processing, and MIDI applications under NEXTSTEP is available free by anonymous ftp from the host ccrma-ftp. The kit, which features a host of new capabilities, was originally developed by NeXT but has been supported by CCRMA since 1991.

BLACKSMITH in December shipped CHARTSMITH, its graphing and charting package. The fat-binary software is designed to let novice or expert users create business or scientific presentations through integrated NEXTSTEP software capabilities like drag and drop and Object Linking. CHARTSMITH sells for \$495. BLACKSMITH: 703/524-6147; info@blcksmth.com.

Legent Corporation has signed a letter of intent to purchase TeamOne Systems, the Sunnyvale, California-based developer of TeamTools, a NEXTSTEP software-development management and configuration package. By combining TeamOne's products into Legent's ENDEVOR change-management product line, the company hopes to provide seamless integration of configuration-management capabilities across a wide range of UNIX platforms. Legent: 703/708-3118.

Xanthus International in late November shipped Graphity, its business-graphing software package aimed at business users. With a complete API and 3-D and RenderMan support, Graphity is designed to function as a stand-alone app or in conjunction with Questor, the company's flat-file database product. Graphity costs \$395. Xanthus: 468/635-3000; xanthus@xanthus.se.

HP [FROM PAGE 13]
and the enterprisewide service and support that HP can provide."

NeXT and HP had the Model 712 in mind as the target platform for NEXTSTEP for PA-RISC as far back as last May, when the two companies announced their partnership, according to a source at NeXT. An alpha version of the PA-RISC port is expected to be shown when HP officially unveils the new systems in mid-January. The product is on track to ship by the middle of this year, as previously announced, the source said.

The new HP low-cost E-Class servers, which begin at less than \$5000, are due in the first quarter of 1994. Designed for enterprisewide solutions requiring a large number of distributed servers, the systems are well suited to host NeXT's Portable Distributed Objects for HP servers, a product that began shipping in November.

The new machines promise fast graphics and integer-calculation speed. MPEG decompression built into the silicon displays full-motion video at 30 frames per second. Although the servers and workstations share the same processor, the servers can hold more memory and larger disks, and have more networking and I/O ports. ♦

Dell [FROM PAGE 13]
Dell's overall strategy.

"Until now, we didn't have the right hardware architecture in place to fully support NEXTSTEP. Now we are ready to go for it," said Tom Hartsell, manager of business solutions software for Dell's advanced systems group.

The company preloads NEXTSTEP to order. It is also in the process of negotiating deals with NEXTSTEP third-party developers, that will allow the company to offer a variety of preinstalled software bundles.

At the low end, Dell offers its Dimension XPS, a commodity ISA system with Number Nine graphics and prices beginning as low as \$2000. Buyers can step up to the Optiplex line of ISA-bus, low-profile desktops and servers or the multibus Omniplex EISA systems. Both of the latter lines are available in Pentium versions.

Dell will also continue to sell its older DGX system.

"This represents a product line that we think is competitive in the NeXT arena. With Dell's aggressive pricing and the performance on the new systems, we think these products will be leaders in price/performance," Hartsell said. ♦

Sun [FROM PAGE 13]
protocol, applications supporting Microsoft's OLE (Object Linking and Embedding) architecture will communicate and collaborate with applications using Digital's Object-Broker implementation of OMG's CORBA standard.

Beyond the technical import of the announcement, Microsoft and Digital are trying to encourage software vendors to develop their products on Windows NT today in preparation for a future migration to Cairo, the object-oriented version of NT, according to Stone.

"We expect all users to migrate to object-oriented operating systems over the years, though the vast majority will continue using procedural-based Windows until their machines are upgraded," said Mark Ryland, senior program manager in Microsoft's Cairo group.

This strategy resembles NeXT's tactic of encouraging developers to bet on NEXTSTEP in anticipation of a future migration to OpenStep. In both cases, companies are trying to highlight an advantage in both time to market and the number of potential desktops for their object-oriented operating systems.

COM is primarily related to

objects distributed over a network, not the higher-level application environment addressed by OpenStep. Instead, the proposed standard competes most directly with Sun's Distributed Objects Everywhere model, as well as NeXT's Portable Distributed Object system. So far, OMG has received 13 proposals for what will ultimately emerge as the CORBA 2 distributed-object standard.

"What we are seeing is that Microsoft is coming into the fold of object systems based on OMG standards," said Bud Tribble, vice-president of object products for SunSoft in Mountain View, California. "That's due to the fact that some level of commonality is going to be necessary to actually create an objectware industry as we go forward in this decade."

The announcement suggests that Digital, which already offers Windows compatibility throughout its product line as an option, may now embrace Microsoft's Cairo operating system and Windows interface as its preferred standard for object-oriented operating systems.

Ryland denied that the COM announcement was rushed to respond to OpenStep. "There's no relation. We picked the date a month or two before." ♦

Wiser SunSoft is proud to be your Bud

One of the first steps in implementing the new era of cooperation between Sun and NeXT was an agreement to exchange customer mailing lists. Lt. Sullivan had to question how much added value this represents for Sun, since the company had little difficulty acquiring the names for a mailing last year.

One name that won't be on the list is hatchet man Randall Stross, whose smutty little volume on Steve Jobs and NeXT has not exactly burned up the best-seller lists, despite a well-oiled publicity campaign and surprisingly uncritical reviews. Stross turned up for the NeXT-SunSoft announcement but was unceremoniously booted by NeXT's marketing managers, who explained the event was by invitation only.

Steve Jobs said at the announcement that NeXT's relationship with Sun is more "intimate" than its liaison with Hewlett-Packard, but that doesn't seem to be bothering the strategists at HP.

That's the beauty of open systems: You compete on the merits and don't squawk about the competition. All of the indications are that HP will expand its commitment to NEXTSTEP, but that doesn't mean they will necessarily endorse the OpenStep strategy. Rather than merging technologies, HP leans toward keeping HP-UX pure and offering NEXTSTEP as an independent option.

Sun and HP should have a little more company very soon. Another "bud" is set to join NeXT's two object partners. Negotiations are running fast and furious, though they didn't make the end-of-1993 timing Sullivan mentioned last column.

Remember those defections of top Epson managers to Canon Computer Systems? CCSI is ready to tell all on January 11. Sullivan is expecting the company to announce that it is broadening its previous SOHO (small office, home office) computing focus to roll out a new division making corporate systems. Based in Portland, Oregon, the new division will offer high-end Intel-based workstations optimized for NEXTSTEP, with other operating systems to be offered at some point in the future. Expect to see the first boxes ship in the first half of the year.

Speaking of Canon, there is still no leader designated for Powerhouse, whose engineers are plodding away at designing advanced workstations. No leader means no business model, no game plan, and no decision on what operating systems its hardware will run. It is very possible that Powerhouse might confine its role

to research and development, with CCSI winning the right to market and sell the Powerhouse workstation line. This would put Canon in the HP mold, selling both a high-end RISC workstation line and a low-end Intel-based workstation line.

With NeXT closed for the holidays, Sullivan's attention turned to third-party promises. Anderson Financial put some teeth in its self-imposed January 1 deadline for shipping WriteUp by promising to refund pre-purchasers a dollar for every day of missed shipment. As of this writing, it looks

like the company could be rebating \$10 to \$15 per prepaid customer. Still, that's way better than Anderson's semicompetitors at Pages, whose AWOL status looks to continue for another month or more. Pages is past the point of making any new promises, which may be part of the problem.

Another company that prefers actions to words is Lighthouse Design, whose end-of-the-year buying spree seems destined to result in another spreadsheet choice for NEXTSTEP buyers, even if the company is staying mum for the time being. Meanwhile, Athena Design is expressing indifference over a possible new competitor, counting on its multiyear head start to keep Mesa out in front.

Back at AFS, ex-NeXTer Chris Younger will be doing some real programming work, despite the impressive Vice President sign on his office door. In fact, he will be splitting his time between home and the office, which helped make the position more interesting than NeXT's offer of his old job back. Chris had departed NeXT only six months ago to work with

his old boss, Scott Abel, at Pencom. Meanwhile, Mark Skaggs has left the Virtuoso/Freehand team to head a new Altsys venture, Tetragon, which will be producing software for the 3D0 platform.

Finally, with the OpenStep deal, NEXTSTEP programming talent is even more in demand. SHL Systemhouse is looking for 25 NEXTSTEP jockeys, having booked more than \$20 million in NEXTSTEP-development business by the end of 1993. With ITS, Canon, and others also looking for people, it's a seller's market.

Having trouble getting along with your bud? Well, maybe it's the pressure of seven million venture-capital dollars. Consider the peacemaking properties of a Lt. Sullivan mug for the low, low price of an insider tip. Leave Sully a voice-mail message at 415/978-3374 or e-mail him at sullivan@nextworld.com. RSA public key available upon request.

Lt. Sullivan



Sun and NeXT throw open the doors to industry-standard object-oriented computing

by Lee Sherman

NEXTSTEP running on millions of desktops with scalable performance that makes it the environment of choice for everything from low-end workstations to high-performance servers.

It once seemed impossible.

But the stunning announcement in November that found longtime competitors NeXT and Sun agreeing to combine forces in an attempt to push NEXTSTEP as the standard operating and development environment for object-oriented client-server systems has dramatically increased NEXTSTEP's chances of becoming entrenched in the enterprise, long before Taligent or Microsoft can even field a product.

In adopting an open-systems strategy, NeXT will publish OpenStep, an open specification that defines the APIs of NEXTSTEP's application environment. SunSoft, Sun's software satellite, has licensed this application environment and will use it in a future version of its Solaris operating system. NeXT will also produce a native port of NEXTSTEP for SPARC systems.

The deal increases the credibility of both companies. For NeXT, it was a tacit acknowledgment from its former arch rival that NeXT is several years ahead of other operating-system vendors in object-oriented technology. Sun's \$10-million investment in NeXT also provides a needed financial boost to the still-struggling company. For Sun, it provides the missing piece in the company's distributed-computing strategy.

"NeXT and Sun have realized they are not each other's worst enemy," says Nina Lytton, an open-systems proponent and president of Open Systems Advisors. "The enemy is Microsoft."

Microsoft's object-oriented environment, Cairo, isn't expected until 1995, the same year that Taligent's object-oriented technology may begin showing up in system software from Apple and IBM. While many companies can afford to wait, others, particularly those in time-sensitive markets such as financial services and health care, will choose to take a chance on NEXTSTEP because it solves their problems today. Even before the announcement, NeXT and Sun had many cus-

tomers in common. NeXT software running on Sun hardware is, for many, the best of both worlds.

Perfect match

While it may seem strange to hear Sun touting the benefits of application development under NEXTSTEP, given its previous dismissal of both NeXT and its technology, the partnership makes strong economic sense.

"It was time to stop the bickering," Lytton says. "NeXT has a system that is accepted among corporate developers, but they've been perceived as an island unto themselves. Teaming up with Sun on OpenStep really reinforces NeXT's viability as a software-only company." For Sun's part, Lytton says, adopting NeXT's technology will help Sun move the UNIX community in the direction of object systems.

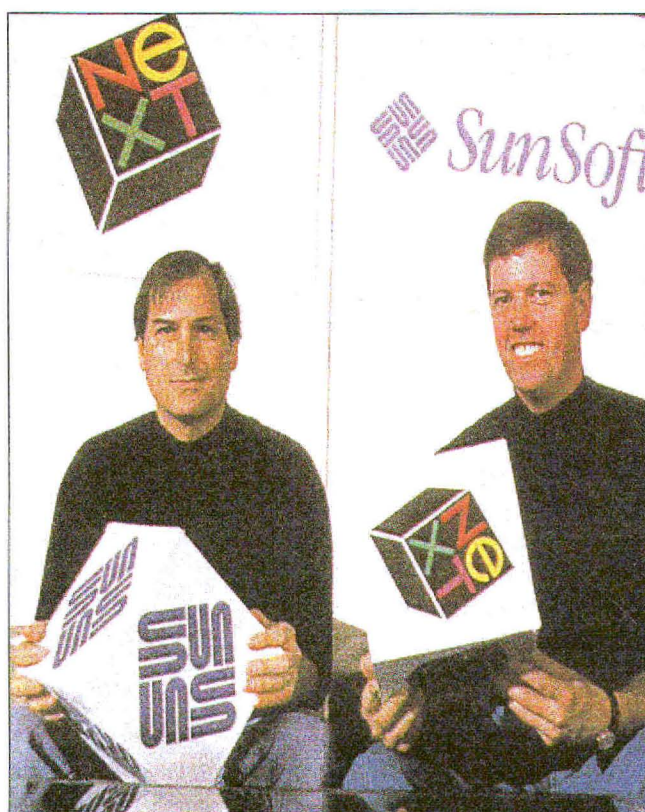
Analysts agree that neither company could do it alone. Sun's respected presence as the leading UNIX hardware vendor will help bring object technology out of the labs and onto the desktops of corporate America. NeXT is the only company delivering a time-tested product today.

Sun might have preferred to develop a solution internally but recognized that burying the hatchet and working with NeXT was the only way

to beat its competitors to market, according to Hugh Bishop, who follows object technology for the Aberdeen Group of Boston. "The market reality is such that in order to provide a timely solution, you've got to work and partner with others," he says.

But even with Sun's clout behind its technology, NeXT has a difficult task ahead of itself. "The key for NeXT is not so much R&D as it is marketing and sales," Bishop says.

Sun's track record in marketing its technology is impressive. With over one million units shipped and over 8000 software applications, Solaris is the most popular UNIX environment available today. It is currently available for SPARC and Intel x86 computers, with plans to move to the PowerPC in 1994, a port that will provide a



TECHNICAL IMPLICATIONS

The OpenStep deal between NeXT and Sun appears to offer important new opportunities to NEXTSTEP and Solaris developers. From the limited details released at the announcement, however, it is difficult at this writing to understand all the technical implications of the agreement. Since the companies themselves have not agreed on the extent of their agreement or the technical means that will be used to accomplish their goals, much of this analysis is necessarily speculative.

SPARC port: For developers, the port of NEXTSTEP to SPARC won't be fundamentally different from the port of NEXTSTEP to HP's PA-RISC architecture. Like the HP workstations, and in marked contrast to the Intel '486 PC world, Sun workstations are integrated systems that work out of the box. Without the need to configure jumpers, mix and match interface boards, and deal with third-party suppliers, SPARCstations will have much of the feel of NeXT's black hardware.

NeXT has already stated that NEXTSTEP 3.3, expected in mid 1994, will support fat binaries for Motorola, Intel, and PA-RISC processors. It is logical to assume that there will now be a NEXTSTEP 3.4, due in late 1994, that will add SPARC support. In that release, we'll see not three but four check boxes with ProjectBuilder (in which applications are compiled) and NeXT's Installer (which lets the user choose precisely which combination of fat binaries should be installed). Fundamentally, NeXT's Multiple Architecture Binary system is already up to the task of supporting SPARC.

Until NeXT implements the support for symmetric multiprocessing systems that's already inside the Mach kernel, Sun's top-of-the-line multiprocessor workstations won't work with NEXTSTEP.

The OpenStep specification: As part of the Sun-NeXT announcement, NeXT said that it would be "opening up" the NEXTSTEP API. By this, NeXT means that it will freely license the Objective-C API used by the NeXT Application Kit, DBKit, and other kits and packages. NeXT has also created the new OpenStep trademark, which it will license free of charge to any company that faithfully implements the API.

OpenStep means that NeXT has now promised not to sue other companies that create NEXTSTEP clones, just as Adobe does not sue those who make PostScript-compatible interpreters. Realistically, it is doubtful that any company will come to market any time soon with a competitive OpenStep implementation, though some members of the Free Software Foundation have long expressed an interest in such a project. Other firms interested in OpenStep could get it cheaper, faster, and easier by simply licensing the software from NeXT, as Sun has done.

OpenStep for Solaris: Unlike the native port of NEXTSTEP, which will require users to give up their installed base of Solaris applications, OpenStep for Solaris will permit NEXTSTEP applications to coexist with existing Solaris applications. It will therefore open up Sun's installed base of more than one million customers to today's NEXTSTEP developers.

Nothing comes for free, however. OpenStep for Solaris will make it possible for a company like Stone Design to port Create to Solaris, but unlike NEXTSTEP for SPARC, that port won't be a simple recompile. Solaris 2.0 is based on SVR4 (System V, Release 4) UNIX, while NEXTSTEP is based on Mach and Berkeley UNIX. Wherever developers make use of a particular Mach function, such as Mach messaging, changes will have to be made. Other changes will be required because Solaris places #include files in different places than NEXTSTEP does.

Also, Sun plans to support OpenStep only on Solaris, not SunOS, says Bud

Tribble, SunSoft's vice-president of object products. Not all Sun customers have made the switch from SunOS to Solaris.

The OpenStep version of a NEXTSTEP program will probably look identical to that same program running on a NEXTSTEP desktop. The differences will be in the other windows: They won't look like NEXTSTEP windows. Instead, they'll look much like they do now: a mix of Open Look, Motif, X Windows, and Microsoft Windows (through Sun's Windows Application Binary Interface, or WABI).

X Windows and Display PostScript: Although the Solaris desktop is based upon X Windows and NEXTSTEP is based upon Display PostScript, this difference shouldn't be a major hurdle for Sun: It recently licensed Display PostScript for X Windows from Adobe. Presumably, PostScript will be available from inside an X Windows window via a Display PostScript-X Windows extension. Although Sun will have to make minor changes to NEXTSTEP's Application and Windows classes to initiate a connection with the Solaris X Windows server and create each window, programs built upon OpenStep will still be able to draw inside those windows with conventional PostScript commands.

Objective-C and C++: Until now, C++ has been the object-oriented lingua franca inside Sun, whereas Objective-C has been the forbidden tongue of a bitter enemy. That might now change. What remains to be seen is how happy Sun's programmers will be to abandon C++, and how intent Sun is on preserving its commitment to existing C++ code. A cozy middle ground would be to allow C++ objects to send messages to Objective-C objects using C++ syntax, and vice versa.

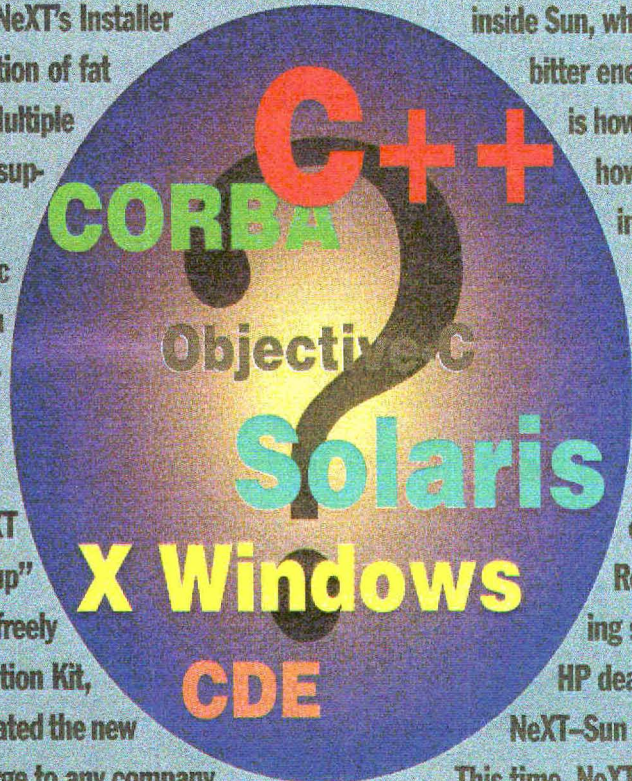
CORBA: Ever since it joined the Object Management Group more than a year ago, NeXT has promised to incorporate standards such as CORBA (Common Object Request Broker Architecture) into the NEXTSTEP operating system. Those promises were repeated when the NeXT-HP deal was announced, and they were reiterated when the NeXT-Sun agreement was revealed.

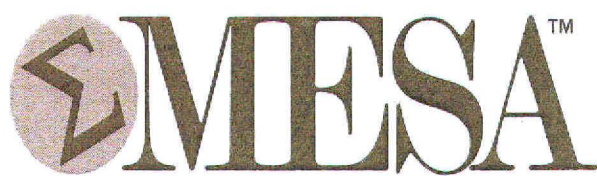
This time, NeXT can be expected to follow through on these promises by making the NEXTSTEP Workspace Manager an object "broker" and by modifying its Distributed Object technology to interoperate with other CORBA-compliant brokers. The reason, as mentioned above, is that Sun has already sunk a great deal of time and capital into its Project DOE (Distributed Objects Everywhere), which is based on ToolTalk, a C++ distributed-object messaging environment that Sun hopes to evolve into a CORBA-compliant object broker. In order for OpenStep applications and ToolTalk applications to be able to coexist on a single Solaris desktop, the two environments must be able to interoperate. The need for this sort of coexistence is the very problem that CORBA is intended to solve.

Common Desktop Environment: For existing Solaris developers, the biggest question behind the NeXT-Sun deal is what happens with Sun's existing commitment to the Common Desktop Environment (CDE) - Sun's attempt, with the help of HP, Novell, Digital, and other major UNIX vendors, to create a standard UNIX desktop, UNIX API, and documentation set.

CDE is fundamentally incompatible with NEXTSTEP (or OpenStep). Instead, Solaris will allow users to select a dominant application-environment "personality" - either CDE, OpenStep, or WABI. Applications written to other environments will run in a window within the dominant environment.

by SIMSON L. GARFINKEL





Scenario:

Global Trading Corporation trades securities on the global financial market. For each trade, GTC must execute a balancing trade to achieve its goal of keeping its portfolio risk neutral. GTC models each security to factor the risks associated with that security. GTC has developed a very sophisticated trading model and needs the right computing tools to realize this model.

Problem:

GTC must model the world financial markets in real time to effectively use the risk neutral model that has developed.

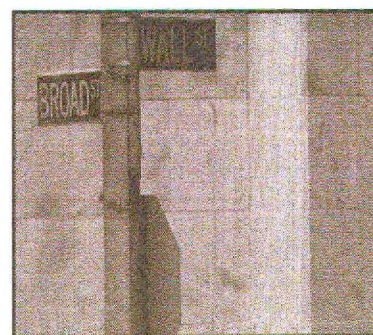
Solution:

Mesa allows GTC to build its sophisticated models for each security within the framework of a powerful spreadsheet. Mesa's real time data feeds keep the models updated and Mesa's SybaseTM access capabilities allow GTC to keep the spreadsheets updated with GTC's current position on each security. GTC also uses Mesa's Object Library and Palettized Objects to build trading applications very quickly.



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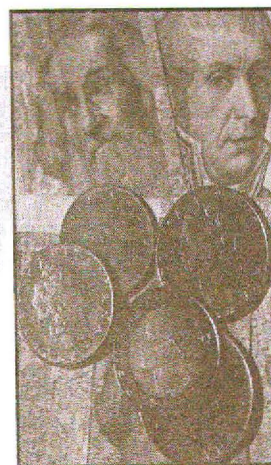
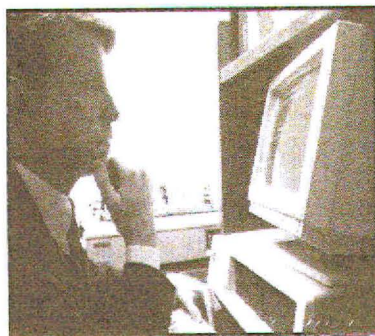


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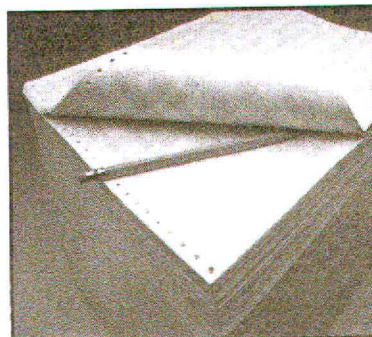
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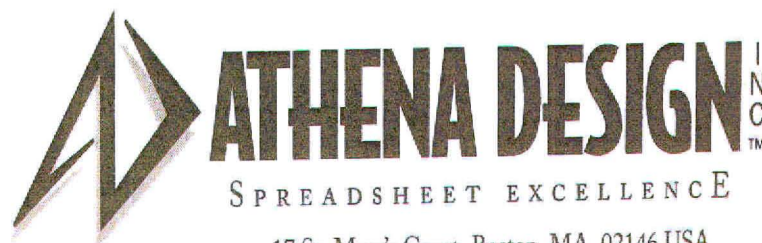
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Layer cake

Many Solaris features will sound familiar to NEXTSTEP users, since both environments are based on UNIX variants. Solaris provides high-performance networking, multitasking, multithreading, and multiprocessing capabilities, and SunSoft has recently adopted Adobe's Display PostScript as an imaging model. With the addition of Sun's WABI (Windows Application Binary Interface) software, Solaris is capable of running Windows applications, much as NEXTSTEP can when combined with SoftPC.

Like NEXTSTEP, Solaris is an operating environment, not just an operating system. At the core is SunOS SVR4, but Solaris is much more than another flavor of UNIX. Sun has a history of supporting standards while enhancing them at the same time. Among its additions to plain-vanilla UNIX are the OpenWindows graphical user interface and the ToolTalk inter-application-communications protocol. Built-in tools include a file manager, multimedia mail system, viewer for PostScript and TIFF images, text editor, and shell. There is also a comprehensive hypertext help system.

Solaris is also multilayered (see "How OpenStep fits in Solaris"). Sitting on top of the operating-system kernel is ONC+ and NFS, software that provides Solaris with its networking capabilities. Above that sits the window server, based on a combination of X11 and Adobe's Display PostScript. Next comes OpenWindows and the Common Desktop Environment (CDE), which together provide the user environment. The top layer is where the applications sit.

That is Solaris today. For several years, SunSoft has been working on Project DOE (Distributed Objects Everywhere), which inserts an additional layer enabling transparent communication between objects over a network.

"DOE is kind of a backplane that you can plug objects into such that they can cooperate over a network," says Bud Tribble, vice-president of object products at SunSoft. It provides the infrastructure that allows objects to communicate over a network and enables users to build object-oriented distributed systems. What it does not provide is the specific application environment – the APIs and user interface – for building and displaying object-based applications. This is where OpenStep comes in.

OpenStep provides Solaris with the very same applications layer current-

ly found in today's NEXTSTEP. That includes all portions independent of the operating system, including the AppKit, DBKit, Display PostScript, Distributed Objects, and Objective-C. All applications written for OpenStep will run in any OpenStep environment, including Solaris. In-house developers benefit from the rapid development cycles available with NEXTSTEP and avoid the limitations that previously existed. They can now deploy their custom apps on Solaris, taking full advantage of Sun's advances in distributed computing and the price/performance advantages of SPARC hardware.

In addition, since OpenStep is a subset of the existing APIs, shrink-wrapped applications should run on Solaris with only minor modifications. OpenStep also provides a way for developers to write applications that take advantage of Sun's distributed-object technology, the DOE system. Object applications based on DOE and OpenStep will coexist with existing OpenWindows/CDE apps.

You've got personality

In the future, Solaris is expected to allow you to customize the user interface to suit your needs by employing what Tribble refers to as "personalities." Users who choose the OpenStep personality will log into a workspace that looks very much like the one NEXTSTEP users know today, with a Sun logo in place of the NeXT logo at the top of the Dock. From within the workspace, you'll have the ability to access any program running on your system, whether it is a CDE program, a Windows program, or an OpenStep program. It will launch in its own window, with controls pertaining to its native environment. While the details of how all this will work have yet to be figured out, Tribble talks of a Dock concept that could span all environments.

Users will select a default personality but will be able to run any of the three types of applications in windows within that environment. SunSoft's challenge, Tribble says, is to make sure that there is smooth interoperability. Each type of application must run within each environment, including the ability to copy and paste between dissimilar application types.

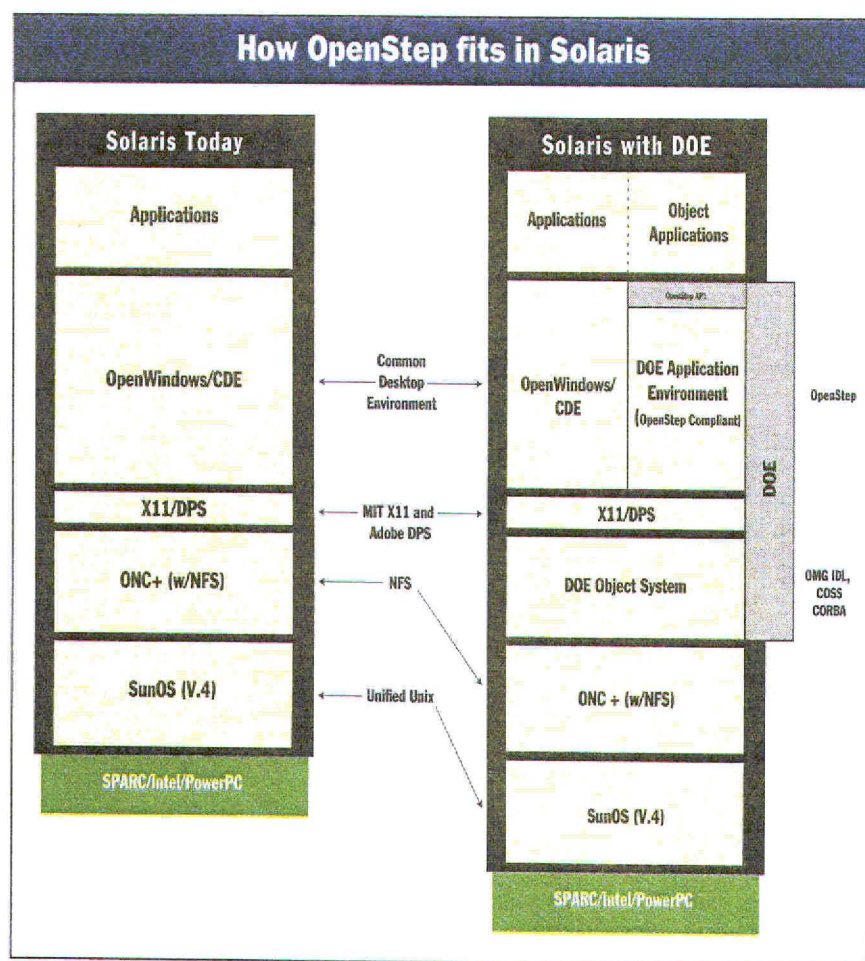
This flexibility is made possible by powerful hardware that can support multiple personalities and new operating environments in which the user interface isn't bound to the operating system, as it is on older systems like the Macintosh.

Although OpenStep will be included in Solaris, Tribble and many analysts agree that many of Sun's existing customers, particularly those without the need for custom applications, will choose to remain with the CDE personality in the near and midterm future. But Sun's customer base has proven to be technically savvy, and a significant percentage is likely to adopt OpenStep as its main working environment.

Tribble thinks that the complete transition will occur over five to ten years. "We believe that we will be shipping our CDE procedural environment through the end of the century and probably beyond," says Tribble. "Over time, more people will move to OpenStep, and, by the end of this decade, more people will be using objects than the procedural environment."

To NeXT partisans who have already made the switch from the procedural world to the object world, that may sound like a slow implementation strategy. But, like any company with a large installed base, Sun has to worry about its customers that have large investments in legacy systems and software.

Meanwhile, NeXT will continue to aggressively pursue its own operating-system strategy. With its native port of NEXTSTEP for SPARC, it adds one more important arrow to its quiver of products. Cooperating on standards while competing on implementations is what the open-systems world is all about.



Future versions of Solaris will support multiple application environments, including OpenStep, that sit atop Sun's DOE technology for basic object services.

LEE SHERMAN is a contributing editor to NeXTWORLD.

INDUSTRY IMPLICATIONS

The OpenStep announcement represents a fundamental shift in the industry alignments over the future of object-oriented operating systems. It has broad implications for competitive operating-system vendors, hardware manufacturers, standards bodies, independent software vendors, and technology users.

The principals: Of course, Sun and NeXT are most affected by the announcement. NeXT receives a new lease on life, a future strategy, and \$10 million in the bank. Most importantly, the deal confirms NeXT's role as a technology leader in object-oriented application environments. The deal is a "big plus, a triple plus" for NeXT, says Craig Sultan, an analyst with Montgomery Securities.

Sun and its software subsidiary, SunSoft, are also big winners. Sun sells 20 percent to 25 percent of its machines as software-development platforms. "It is absolutely crucial to Sun to continue to be perceived as the leading platform for software development," says David Card, director of advanced operating systems research for International Data Corporation. "People won't understand for a year how valuable this announcement is to Sun," Sultan adds.

On the other hand, the deal was a loss for the group inside Sun that has been working on its own implementation of an application layer for Project DOE (Distributed Objects Everywhere). According to a source inside Sun management, "there are lots of people at Sun for whom it is not good news."

It is also a good deal for Canon, one of NeXT's large shareholders and a distributor of NeXT and Sun products in the Japanese market. Sun's equity position in NeXT appears to protect or even increase the valuation of NeXT as a company.

OS competitors: Prime targets of the announcement were the other object-oriented operating-system vendors. If OpenStep is supported as an object-oriented standard on a variety of UNIX workstations, it puts greater pressure on Microsoft and Taligent to bring their products to market quickly.

"OpenStep is a preemptive move against Taligent and Cairo. Of these, Taligent is most directly affected because they clearly operate in the same object space. Microsoft talks about objects, but Cairo is shaping up to be something different," Card says.

Taligent reacted cautiously, saying that its product will be "much more advanced and comprehensive than NEXTSTEP," according to a spokeswoman. But Taligent was known to have been courting Sun strongly. "The girl they brought to the prom is dancing with another guy," says Jonathan Schwartz, president of Lighthouse Design.

Microsoft did not react with words to the announcement. Instead, it announced a new object-oriented initiative with DEC the following week. The irony of this move was not lost on several observers, including Sultan, who points out the fortuitous timing of the announcement. Besides, according to Card, Microsoft's plans for Cairo are not really based on a pure object-oriented model and may therefore appeal to a slightly different customer base when released.

Workstation manufacturers: This deal was directed against Sun's software rivals, not its hardware competitors such as HP, IBM, and DEC. Since OpenStep will be published as an open standard, any of these players could adopt OpenStep themselves. In effect, OpenStep is one more option for these companies and adds competition to the marketplace for their operating-system dollars. "This deal is not a leg up on HP and IBM for Sun," says Card.

HP, which has its own alliance with NeXT, issued a statement that it is

"pleased that NeXT's products will now be available to an even wider audience." It also says it will fully support NeXT's OpenStep submission to standards bodies.

Some observers see benefits for HP from the deal. "You could say that HP was out on a limb in the financial-services community with its support for NEXTSTEP. This deal validates their position," says Dwight Koop, director of information technology for Swiss Bank Corporation. And HP may potentially sign an equally strong deal with NeXT for a native OpenStep implementation.

Standards organizations: The OpenStep announcement overlaps the ongoing Common Open Systems Environment (COSE) initiative, a process aimed at deriving a standard UNIX from multiple operating-system providers. While the Common Desktop Environment (CDE) represents a consensus among COSE participants for the APIs of procedural applications, a coherent strategy for object-based applications was conspicuously left for later discussion.

According to Bud Tribble, vice-president of object products at SunSoft, "In the case of objects, we followed the COSE process with NeXT. The other COSE partners were notified," he says. When NeXT completes its OpenStep specification in June, it will be submitted for approval to either the Object Management Group (OMG) or the X/Open consortium for approval.

"Technically, it sounds pretty good, but there is a process for us to make a selection for our object operating-system standard," says Chris Stone, OMG's chairman.

Card expects that OMG and X/Open will need to do a balancing act with OpenStep and Taligent. "OMG needs to make compromises to get the most number of players involved, but Sun, despite its public commitment to openness, has, in the end, historically gone with the best technology. Sun will only bend so far to the compromises that OMG is forced to make," he says.

Independent software vendors: NEXTSTEP commercial developers could hardly contain their enthusiasm for the deal. "This is the first unadulterated piece of good news in the NeXT community in the last four years. There is no downside at all," says Schwartz of Lighthouse Design.

In a year, developers can port their applications to NEXTSTEP for SPARC and then port to OpenStep sometime after that. Each port represents a larger potential market. In the meantime, NeXT's brighter future ahead will help with both current sales and financing.

For Solaris developers, the deal creates a whole new market. Companies publishing CDE applications will continue to enhance them, since CDE is supported by numerous manufacturers, not just Sun. Also, much of Sun's customer base will continue to use CDE applications. On the other hand, developers interested in gaining experience with Sun's new object-oriented strategy will likely begin to experiment with NEXTSTEP for Intel, since the OpenStep interface (and underlying concepts) will be nearly identical to NEXTSTEP's current implementation.

Customers: Existing NeXT customers gain new options for future application deployment. They gain access to Sun's full line of hardware through the native NEXTSTEP port or SunSoft's future OpenStep product. Since Solaris is also destined for the PowerPC, NEXTSTEP users will also have the choice of those Motorola-based systems.

When Solaris with OpenStep becomes available, Sun customers will have the option to adopt the new technology at their own pace. The future product will include OpenStep as one of three supported application environments.

by DAN LAVIN



Before joining SunSoft as vice-president of object products in June 1992, Guy L. (Bud) Tribble was a founder of NeXT and its leading software architect. More than anyone, Tribble is the visionary behind OpenStep. He is also the software manager charged with making it a reality. A team of *NeXTWORLD* editors interviewed Tribble about the implications of the OpenStep announcement.

NeXTWORLD: Sun evaluated various options before settling on the OpenStep strategy. What were those options, and why did you decide to go with NEXTSTEP?

Bud Tribble: For the past several years, Sun has had a distributed-object program called DOE, or Distributed Objects Everywhere. The piece of DOE that actually provides the application environment, as opposed to the infrastructure, is the piece where we had some alternatives. There were basically three options that we were looking at. One was to build something from scratch ourselves. Another was to go talk to Taligent, which is the other company developing things in this space, and the third was NeXT.

What about Microsoft?

Well, Microsoft is another company that has a strategy in this space with Cairo, and we considered that. What it came to for us was looking for something that not only could fit into our distributed-object vision, but something that already existed, that was out there shipping and was customer-tested. Typically, when things ship, it takes roughly 3.1 versions to get a

In terms of timing, Sun's OpenStep version of Solaris, or whatever the product will be called, is at least 18 months out. Taligent ought to have some kind of product in that time frame as well.

We actually haven't announced a date for OpenStep from SunSoft. We expect to have a better road map available at our April developer conference, but I believe that we're going to be able to field a product – OpenStep on Solaris – that is actually a year or possibly two ahead of similar robustness available from either Taligent or Microsoft.

We're starting from something that's shipping today. OpenStep is not going to be a redesign of NEXTSTEP. It's going to be very close to NEXTSTEP 3.2 in how it works.

Now, just to play devil's advocate, you could argue that NEXTSTEP was designed six or seven years ago. Something like a Taligent coming along today may be a generation ahead.

You've got to get perspective on this whole thing. Objects were invented by Xerox in the 1970s, and some people actually go back as far as Ivan Sutherland in the 1960s. We're mining technology that was developed a while ago in terms of developing products that solve customers' needs.

The big discontinuity is the object paradigm. NeXT is on the far side of that discontinuity today. Taligent and potentially Cairo, it's hard to say, will also attempt to be on the far side of that paradigm shift. Within that

Bud Tribble Explains It All



One of NeXT's original founders relates Sun's view of OpenStep

real product. I think Microsoft has proven that. We wanted something that had a time-to-market advantage.

To what extent did your familiarity with NEXTSTEP play a role in the decision?

That can be a double-edged sword. The closer you are to something, the more you can see what is good about it, as well as its blemishes. I would say our team did a good technical and business evaluation of each option.

Keep in mind that the original project for distributed objects actually started within Sun Microsystems Labs – the research arm of Sun – more than five years ago. About two years ago, it moved from the research stage into the product stage. For the past two years, SunSoft has been working together with the Object Management Group (OMG) and the other companies in OMG to create an infrastructure for building systems out of distributed objects. It's kind of a backplane that you can plug objects into such that they can cooperate in running a company over a network.

The OpenStep technology adds the application framework. In other words, we've got this great infrastructure for having objects communicate over a network and for building distributed systems. But what are the APIs and what's the GUI and what are the components for building applications?

shift there's going to be gradations, but I don't see there being huge, leap-frog, quantum differences between the various object systems.

Another factor coming into play is that you will see more and more of the object systems out there gravitate around some of the OMG standards. You even see Microsoft now with OLE and Cairo kind of centering around that. And that's simply due to the fact that some level of commonality here is what's going to be necessary to actually create an ObjectWare industry as we go forward into this decade.

OPEN STANDARDS

What needs to happen for OpenStep to emerge as a broadly based standard in the industry?

First, we need to write the specification down and take it forward to the appropriate standards bodies. There is nothing magic about the standards process. I do think it's important to realize that standards are necessary to enable an ObjectWare industry at some point in the future.

In terms of the technology itself, objects are at a fairly early stage. If you talk to people at OMG, when will they get around to standardizing the file choosers and such? Not for a while. They're standardizing from the infra-

structure on up. It's not going to be an overnight process. Nor should it be, because you don't want to put in stone a set of standards that turned out to be not the best way to do it.

Is it a foregone conclusion that OMG will take OpenStep as its standard? What about X/Open?

We will be promoting OpenStep as a standard, but it is not a foregone conclusion. One of the important things about standards if you go talk to OMG, for example, or X/Open, which is emerging as the standards body that's interested in some of the COSE efforts, is that they will refuse to standardize something unless a proven implementation exists. So you have to ask the question, are there competing standards out there for objects or for object-application environments? Today, there really aren't any.

Aside from some standards organization stamping something, what's really necessary is market acceptance of a product. Do you expect to see other companies that have been associated with the COSE process step forward and adopt OpenStep?

I expect to see that happen, and I think that, over the course of the next year, we will see significant movement there. Both NeXT and Sun will encourage that within the industry and among our own partners.

Do you think Hewlett-Packard will step up with the kind of commitment that SunSoft has made?

That's hard to say. We would certainly welcome that. As you know, HP has already made an endorsement of NEXTSTEP, and we would have to talk to them about whether they would increase their endorsement.

INS AND OUTS OF OPENSTEP

Moving on to the future OpenStep product, could you help us understand what exactly it is, and what it will look like?

Let me give you the context. The application environment that we ship today – OpenWindows, soon to become the Common Desktop Environment (CDE) – is a procedural environment. We believe that we will be shipping that procedural environment through the end of the century and probably beyond. We have customers who have either lots of legacy stuff or no desire to retrain for objects.

But we also need a solution for customers who do want to shift to the object paradigm. We don't have that today, so we're adding the OpenStep standard. Now, instead of one application environment, there are two. In fact, there are three, counting WABI (Windows Application Binary Interface).

It's like this. If you write apps to the Windows API, they run on Solaris in the WABI environment. If you write apps to the procedural environment, they run in the CDE environment. If you write them to the object environment, they run in the OpenStep environment.

Now it may be that the dominant personality for someone is CDE, and they never run WABI, and they never run OpenStep. Or it may be that the dominant personality for someone is OpenStep, and they don't bother running WABI or CDE. What we have to do is make sure that there is smooth interoperability. I need to have all these windows on the screen at the same time and be able to cut, copy, and paste between them.

Which environment will the user see? Does OpenStep include the Dock?

If you're in a CDE-dominant environment, it'll basically look like CDE, but you will be able to run Windows apps and OpenStep apps. If you're in the OpenStep environment, you'll basically see the NEXTSTEP environment, including the Dock.

Now, over time, we may be able to have a Dock concept that spans both environments, and maybe even the Windows environment. There's

nothing technically that says you can't do that. And that would actually make users' lives that much smoother. We wish probably that these different personalities all had exactly the same GUIs, but we live in a real world.

It is similar to IBM's situation, where you've got an OS/2 personality and a Windows personality and, someday in the future, you'll have a Taligent personality.

But the key point is that you will get OpenStep with every shipped copy of Solaris. You get Solaris and you get the whole thing. Clearly, there are installation options. You can decide to install one thing or another.

For third-party developers, both NEXTSTEP and Solaris, what do you recommend they do today?

Clearly, NEXTSTEP developers should not only keep developing, but they should feel better about it. As for our CDE developers, we are not saying they should all switch to NEXTSTEP today. In fact, if they want revenue today, Sun's current developers should keep building CDE applications. What we'll find is that more and more people will convert over time. Initially, that will probably be more the in-house developers than the independent software vendors.

And in the longer term?

There will be early adopters, starting now, who are very interested in objects and will see the benefit of moving to that paradigm. But the bulk of customers will probably stay with the procedural environment. Over time, more people will move to OpenStep, and, by the end of this decade, more people will be using objects than the procedural environment. You'll have people who are at one end of the spectrum and people who are at the other end of the spectrum.

KERNEL VISION

Can you clarify which parts of NEXTSTEP are included in OpenStep? What about elements like 3DKit and RenderMan?

The OpenStep spec will include, if not every NEXTSTEP API, a robust enough set that 90 percent of the applications that are written today can run on top of what we define as the OpenStep spec.

You have to realize that NeXT is an evolving system, and some pieces of the system are more mature and customer-tested than other pieces. Clearly, the parts that we're most interested in are the parts where customers have actually used them to develop mission-critical apps. If there's something that is more recent and hasn't really been used, it would perhaps not find its way into the OpenStep spec. There may also be a few cases where we work on parts where people want to see enhancements or changes.

How difficult is it technically to take those parts of NEXTSTEP and integrate them with Project DOE?

We don't see that as a very big difficulty. One of the aspects of DOE and the OMG CORBA specification in general is that it was designed to be very general and to accommodate a variety of object models. We see a pretty good fit there with NEXTSTEP technology.

Okay, but there are some differences. What about the issue of NeXT's use of Objective-C as opposed to C++?

The OpenStep APIs are today defined in terms of Objective-C. SunSoft will support Objective-C as another language offering. Many apps are written even today where part of the app uses Objective-C and other parts use C++. With Improv, for example, the back end is in C++, and the GUI part was in Objective-C.

Part of our vision with OMG is that you raise objects  **Page 34**

For those of you who haven't upgraded to 3.2 yet, **zgrep** is a new program in **/usr/bin** that wasn't part of the 3.1 release. Unfortunately, those of you who have upgraded will discover that **zgrep** doesn't come with any documentation – NeXT has left us on our own. Being the adventurous hacker that I am, I bravely typed “**zgrep**” at the Terminal prompt and got this helpful message:

```
% zgrep
grep through gzip files
usage: zgrep [grep_options] pattern [files]
```

Oh, so that explains it: **zgrep** greps through **gzip** files. Fortunately, NEXTSTEP 3.2 includes on-line documentation for both **grep** and **gzip**. (The man page for **gzip** was somehow not included in NEXTSTEP 3.1.)

To be fair, NEXTSTEP 3.2 is, on the whole, better documented than 3.1 ever was. There are only 27 commands in the 3.2 **/bin** and **/usr/bin** directories for which NeXT didn't provide man pages (a substantial improvement over 3.1). Most of 3.2's mysteries, such as **zgrep**, are fairly obvious. NeXT has even started to document commands like **lipo**, which it wrote to support fat binaries. Unfortunately, the usage, options, and magical incantations needed for other new or arcane commands remain a mystery.

Any operating-system vendor can grab the latest utilities from the Free Software Foundation (FSF), throw the commands in **/bin** and their documentation into **/usr/man**, and call it a “state-of-the-art operating-system software.” To NeXT's credit, the company's developers are actually making advancements in the underlying operating system as well (features like fat binaries and Driver Kit fall into this category). But unlike the FSF, which values documentation as highly as code development, NeXT seems to let docu-

mentation take a backseat to hacking.

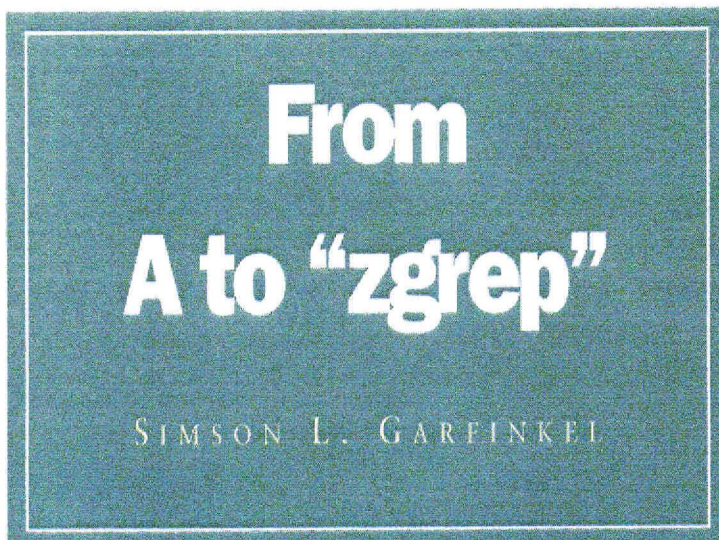
I've raised the issue of documentation with NeXT many times in the past. According to Rick Jackson, NeXT's director of product marketing, the company can only allocate a certain amount of people to technical publications, “given NeXT's limited resources.” NeXT has also specifically chosen not to document some aspects of its operating system, such as InterfaceBuilder's internal file format and the API for applications like Mail and ProjectBuilder, so that the company doesn't get locked into supporting developers who write code that requires particular file formats or object calls.

The flaw with this argument is that the FSF isn't exactly overflowing with cash itself, yet it manages to ship detailed and accurate documentation concurrently with its utilities and application programs.

The real difference between how NeXT and the FSF handle documentation is that NeXT views documentation as an afterthought, a nice-to-have, something that is fundamentally not as important as the underlying code. The FSF, on the other hand, views documentation as an essential ingredient in the product mix. You can't effectively use an application or an operating system unless you have clear, concise documentation that explains it.

There is a hidden benefit to good documentation. When programmers are forced to sit down, go through their code, and write about how it works, they frequently find bugs that were not uncovered during development or testing. Perhaps this is one of the reasons why the FSF generally produces more reliable code than the hackers in Redwood City. ♦

SIMSON L. GARFINKEL is the senior contributing editor to NeXTWORLD.



NeXT AND HEWLETT DELIVER THE POWER OF OBJECT

Financial services is an industry in which time is critically important.

Here, where every second can mean the difference between profit and loss, some companies have already harnessed the power of software objects in select departments to stay ahead of rapidly changing markets.

Now NeXT and Hewlett-Packard together offer a suite of business solutions that spread this power throughout the entire enterprise.

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Object•Enterprise combines the strengths of two technology leaders to offer what no one company can: a unified enterprise-wide information system based entirely on object-oriented software.

In a time-conscious business such as a brokerage firm, this type of system offers an irrefutable advantage. Because it allows a new generation of financial applications to be developed and deployed at every level of the organization—with radically greater speed.

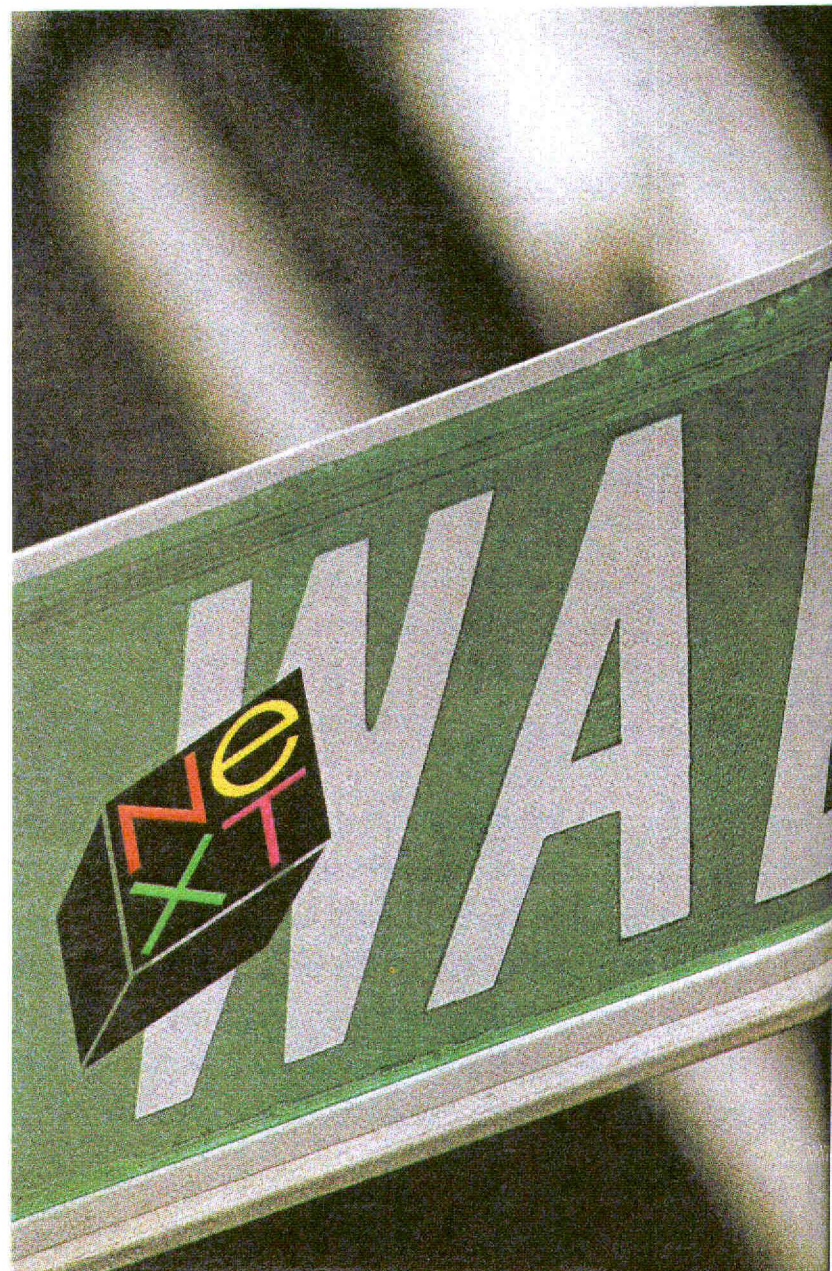
Object•Enterprise brings NEXTSTEP™ software to a full spectrum of Hewlett-Packard hardware, from PCs to workstations, with full support for NEXTSTEP objects on business servers. The result is a seamless and scalable system that offers a true competitive advantage.

NEXTSTEP: “...PROBABLY THE MOST RESPECTED
PIECE OF SOFTWARE ON THE PLANET.”

The opinion is from *Byte Magazine*. The fact is, NEXTSTEP is without rival as the only shipping object-oriented user and development environment.

Many Wall Street traders are already reaping the benefits of this technology, deploying complex custom applications in months instead of years.

That's because NEXTSTEP allows applications to be constructed in a modular



So far, the phones are silent in the developer-relations departments of Sun and NeXT. There has been no rush of NeXT developers joining Catalyst, Sun's registered-developer program, nor a wave of Sun developers inquiring about NeXT's programs.

At first blush, there appears to be no hurry. The SPARC port is nine months out, and true Solaris integration is probably 18 or more months away.

But from a business standpoint, both NeXT and Sun developers should start investing in the future right now. The lag before products get to market is critical preparation time that will allow both camps to get a head start on Johnny-come-latelies.

Sun developers and consultants should realize that it takes a year to create a decent NEXTSTEP programmer. And it can take up to two years for a team to gel and start creating large-scale applications. Part of this process is fully understanding object-oriented programming, and part is learning NEXTSTEP. Since most Sun developers are not doing any sort of object-oriented work, they can't skip this step.

No, the whole Sun market won't embrace NEXTSTEP in two years. But a large percentage of your most important clients will embrace it. The Sun-NeXT deal was driven by customer demands from extremely high-margin accounts. These are the folks who pay the most for consulting and care about functionality – not the price tag for shrinkwrapped applications.

After all, do you want to sell software in the object market at high prices and margins as part of custom solutions, or do you want to compete with a \$49 Quattro for SPARC at Egghead when the CDE space opens up in 1996?

Remember also that Sun's version of OpenStep may only be the tip of the iceberg. HP, IBM, and DEC might very well join this bandwagon, mak-

ing possible a relatively painless object-oriented cross-platform strategy.

To be a player in object-oriented consulting and applications in 1995 and beyond, pick up a copy of NEXTSTEP today. Start by producing a few small applications. They'll get your feet wet and may even pay for your "training program." Go to your current large clients who also use NEXTSTEP and ask them what they would like you to develop. Join NeXT's Registered Developer Program and send some people to training.

You could even start porting your large-scale apps or rewriting them to NEXTSTEP. It appears likely that you can then move them to OpenStep pretty easily from that point – perhaps even a recompile will do the trick.

Likewise, NeXT developers and consultants should start to learn about the Sun environment. Join Catalyst, find out about the market, and figure out who the customers are.

Networking, communications, and system-administration developers and consultants better start to learn Solaris, pronto. OpenStep is only the top layer, the application-development piece. You will need to climb the learning curve on lower-level issues, and you need to start now. If that large trading firm abandons NetInfo completely, well, it might be best to have a new skill set to avoid being

locked out by more savvy competitors.

The good news is that customers for object-oriented systems are willing to pay big bucks for knowledgeable consultants and polished applications. These are smart customers at the high end who hire smart people. If you don't act now to upgrade your skill set, you may be out in the cold when the products start to hit the market. ♦

DAN LAVIN *comments on business issues in NeXT Ink.*



PACKARD NOW ON AN ENTERPRISE-WIDE SCALE.



fashion, using software objects as building blocks. These objects, easily re-used and maintained, take the place of complicated and error-prone computer code.

While the rest of the computer industry is still years away from implementing an object-oriented system, NEXTSTEP is here today. Polished and perfected in its third release

AN OBJECTIVE POINT OF VIEW, FROM DESKTOP TO DATA CENTER.

Hewlett-Packard has long led the drive toward interoperability and object computing, offering a scalable hardware architecture from client desktop to the enterprise-wide data center.

With a family of products including Intel® 486-based Vectra PCs, PA-RISC workstations and business servers, Hewlett-Packard delivers leading technology at all levels. Along with quality engineering and rock-solid service and support.

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Object•Enterprise gives you one point of contact to tap the collective power of Hewlett-Packard and NeXT. And we do encourage you to make contact.

Just call us at 1-800-TRY-NeXT. We can supply you with more information, and reserve seats at an upcoming Object•Enterprise seminar in your area. (We'll be conducting seminars throughout the country in 1994.)

We think it will be a day well spent. And we're keenly aware of how valuable your time can be.



Charting Done Right

Three new apps deliver presentation graphics NEXTSTEP-style

by SETH ROSS

Seamless integration. That has been the promise of NEXTSTEP from the start. Instead of relying on monolithic applications that include everything and the kitchen sink, NEXTSTEP users could assemble slim, modular, single-purpose apps into integrated environments.

Three independent software vendors have delivered on this promise in the charting and graphing category with CHaRTSMITH from BLaCKSMITH, GraphRight from Watershed Technologies, and Graphity from Xanthus International.

On other platforms, graphing functions are often wrapped into gargantuan spreadsheet programs, and their design philosophy is based on coding in as many features as possi-

ety of sources. Our focus was on the kind of business graphics useful for reporting functions, though any of the three could easily be applied to other data-analysis and presentation tasks. All three can create graphs in an array of standard formats: bar, line, high/low, high/low/open/close, area, pie, X/Y, and scatter.

All three give you complete control over the presentation of graphs, including all of the major elements of graph anatomy: titles, subtitles, the x- and y-axis, major and minor ticks, grid legends, backgrounds, and so forth. All three also allow you to export graphs as either EPS or TIFF images. All three can serve as the source, as well as the target, of object links, so you can embed your graph in a word-processing document and watch it automatically update as you make changes.

CHaRTSMITH 1.0



The graphing app of choice for business users because of its effective use of the NEXTSTEP interface. With the printed docs and API that are promised for Version 1.1, it's a contender for a future five-cube rating.

\$495

BLaCKSMITH, 2100 Lee Hwy, #201, Arlington, VA 22201. 703/524-6147, 703/524-7215 fax; info@blcksmth.com.

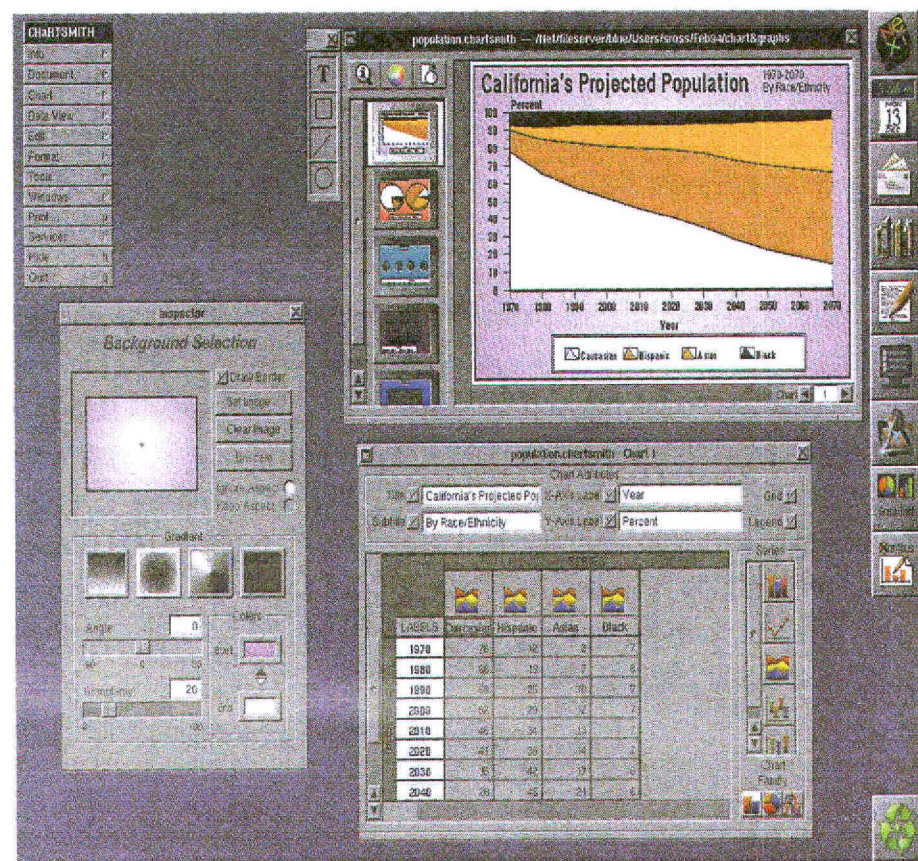
ble. All three of these apps, however, support numerous ways to suck in graphing data from spreadsheets and word processors, including the Services menu, cutting and pasting, dragging and dropping, and object linking. Two of the apps, GraphRight and Graphity, include APIs that allow developers of custom applications to integrate graphing functions into their apps. A new version of CHaRTSMITH should include an API by the time you read this review, according to BLaCKSMITH.

We used these apps to create a wide variety of graphs from a vari-

ety of sources. Our focus was on the kind of business graphics useful for reporting functions, though any of the three could easily be applied to other data-analysis and presentation tasks. All three can create graphs in an array of standard formats: bar, line, high/low, high/low/open/close, area, pie, X/Y, and scatter.

The Chart Window displays graphs. To its left lies an ingenious Navigator that presents framed thumbnails of graphs. The Navigator will seem familiar to users of Lighthouse Design's Concurrency. It provides a simple and intuitive way to move from graph to graph: Just click a thumbnail, and the selected

Alas, the version of CHaRTSMITH used for this review is not perfect. Call me a traditionalist, but a \$495 shrinkwrapped app should come with printed docs. Also, Version 1.0 doesn't have an API, a major disadvantage for custom-app hackers who would rather buy an app than code a graphing module from scratch. BLaCKSMITH promises both printed docs and an API for the 1.1 release, which is scheduled for February. Assuming it addresses these deficiencies, CHaRTSMITH is rec-



CHaRTSMITH's Navigator provides thumbnails that make it easy to move from graph to graph.

graph is displayed.

CHaRTSMITH's modal Inspector panel gives you complete control over a graph in an intuitive, nested fashion, making it easy to groom the presentation of graphs. Click the part you want to change, and the Inspector displays the relevant set of controls. CHaRTSMITH supports a wide array of special effects, including different kinds of graded fills, text shadows, and simple 3-D renderings.

GraphRight 1.1



This graphing app from an experienced data-visualization firm shows great promise for scientific and engineering uses and as a graphing module for custom apps. Runs statistical calculations on the fly. Needs a bit more polish in general and better documentation in particular.

\$399

Watershed Technologies, 13 Tremont St. #3F, Marlboro, MA 01752. 508/460-9612, 508/481-3955 fax; graphright@watershed.com.

ommended without reservation.

Slide ruler required

GraphRight comes from a firm that knows graphs. Watershed Technologies is a defense contractor specializing in computational fluid dynamics and graphic visualization. Its experience shows in this first product.

GraphRight matches CHaRTSMITH feature by feature and ups the ante by allowing you to depict a variety of statistical trends. GraphRight is the only app of the three reviewed here that can automatically calculate and display the standard error and standard deviation of a given data set. It can also plot regression lines. While it's possible to perform statistical analysis in a spreadsheet program prior to importing data, it's handy to have the ability to do it on the fly during a graphing session.

Like CHaRTSMITH, the GraphRight interface is divided into three parts: a Data Table, a Chart Viewer, and a pair of inspectors, one for data

and one for graphs. While GraphRight does a good job of making the program's controls easily accessible, it lacks the spit and polish exemplified by CHARTSMITH's Navigator. A pop-up menu in the worksheet-like Data Table can bring up different graphs. The Chart window is a simple blank page that can accept more than one graph at a time.

Graphity 1.0



The graphing app of choice for the NEXTSTEP power user. Allows users to turn graph documents into sophisticated multimedia presentations. Harnesses the power of RenderMan to create textured, illuminated, and shaded 3-D graphs.

\$395

Xanthus International, P.O. Box 20161, S-161 02 Bromma, Sweden. 46/8/635-3000, 46/8/98.70.67 fax; xanthus@xanthus.se. In North America, Alembic Systems International, 14 Inverness Dr. E., Ste. G228, Englewood, CO 80112. 303/799-6223, 800/456-6508, 303/799-1435 fax; info@alembic.com.

Like its competitors, GraphRight enables you to import data in a variety of ways, including from the Services menu. But it's not as smooth as CHARTSMITH. Its Services menu feature does not let you specify up front the kind of graph you want. Nor could we specify whether or not the data contained labels, forcing us to reinput the labels of each imported set of data.

GraphRight seems reliable, though we got stuck once. Whenever we decreased the range using the Axis button on the inspector, GraphRight returned an error message: "Entered Maximum is less than Maximum of Data." But it wasn't.

As this review was compiled, GraphRight lacked decent documentation. The 58-page printed manual is only moderately useful and lacks basic amenities like an index. The on-line help is next to useless.

None of the problems with the app affect its fundamental usability and usefulness, which is extended by an API for custom-app coders to hack on. With a few bug fixes and packaging improvements, it will be the graphing app of choice for scientific and engineering users who can make use of the program's statistical features and API.

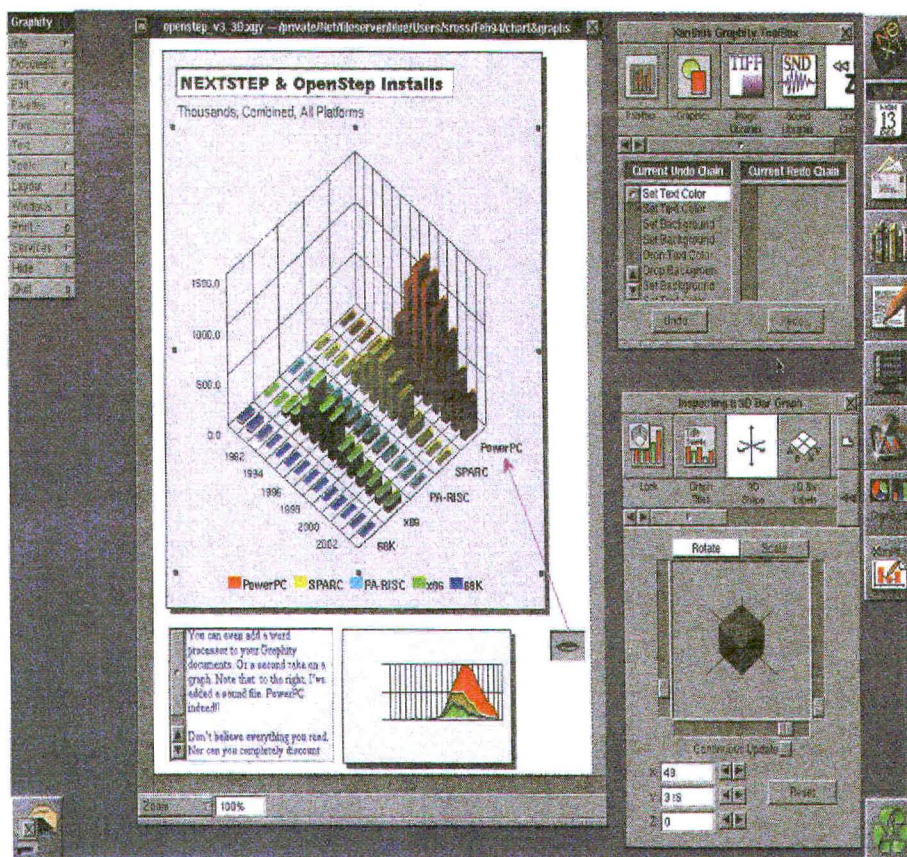
Graphing on steroids

With Graphity, Xanthus took the basic graphing-app model and added an array of features that redefine the genre. Those familiar with the Swedish software house's other feature-laden apps will feel right at home.

Graphity's interface is quite different. In addition to the normal features common to the other products, it includes a ToolBox, a Preferences-like panel with a string of tool buttons from which to choose. The ToolBox expands the meaning of the word *graph*. It contains palettes from which you can drag objects into documents. One palette allows you to drag commonly used graphs or graph templates into documents. Another lets you drag a primitive word processor into documents. Other ToolBox tools allow you to maintain sound and image libraries, all of which can be dropped into graphs at will.

With Graphity, graphs can include other graphs, text files, sounds, and images. Users can transform a simple graph into an elaborate multimedia presentation.

Graphity's sexiest feature is the ability to harness NEXTSTEP's built-in RenderMan facilities to create 3-D graphs. In the right hands, Graphity can be used to create spectacular 3-D data visualizations. A modal Inspector allows you to rotate and scale 3-D graph elements, define surface shaders, camera aspect, and various



Graphity taps into NEXTSTEP's RenderMan facilities to let users create 3-D graphs. Note that the 3-D graph attains photorealistic qualities when printed.

Man engine that we've seen outside of dedicated 3-D programs.

Of course, there are pitfalls involved with 3-D graphing. With all the power of RenderMan at your disposal, there's one more dimension in which to commit fatal design errors. Also, rendering is slow, slow, slow, even on the fastest NEXTSTEP hardware. 3-D fanatics will have to wait for serious HP or Sun iron before 3-D graphing becomes a deadline-friendly process. Graphity ameliorates this situation by allowing you to either work in wire mode or turn off 3-D screen drawing altogether.

Naturally, there is a penalty

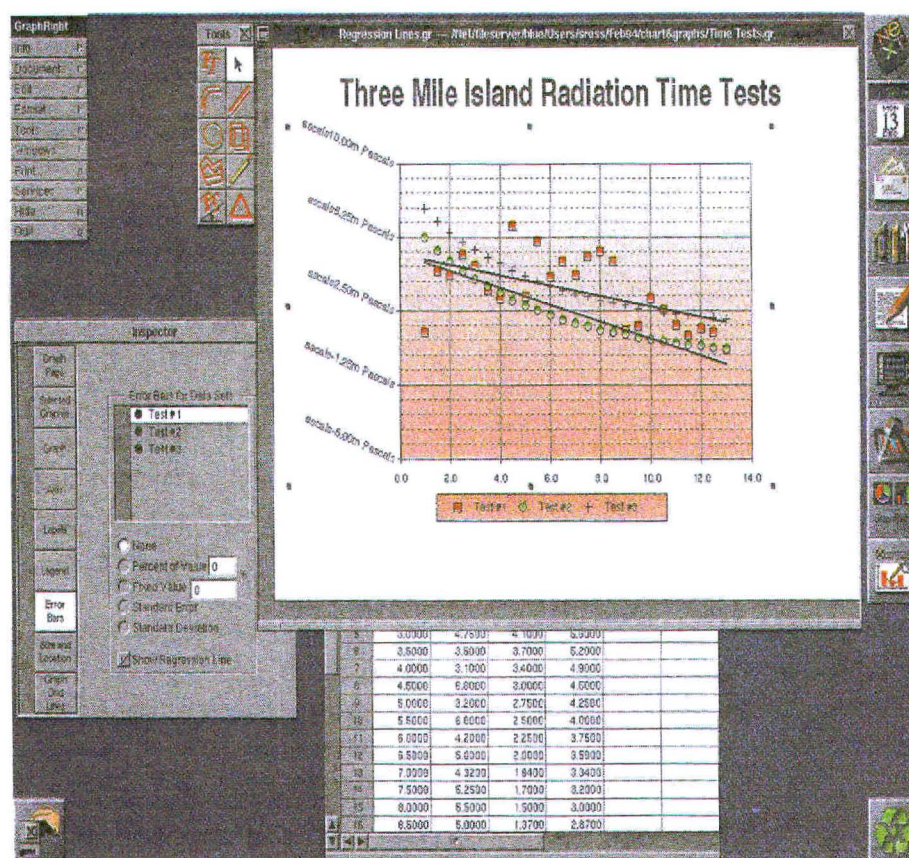
difficult to master of the three in this review. It's not immediately clear which Inspector items to use to control any given graph element. Nor is the relationship between the ToolBox and the Inspector clearly delineated. In fact, there's even some redundancy between the two: Either can be used to control the width and fill of a line, for example.

Graphity ships in the most professional packaging of the three apps. It comes with a 133-page manual, as well as complete on-line help. Like GraphRight, it includes an API for custom-app developers. Unlike GraphRight, Graphity's API is well documented in hard copy.

The data points

NEXTSTEP users have a hoard of riches from which to choose in the domain of graphing applications. CHARTSMITH is the tool of choice for business users because of its elegant interface and approachability. Given minor packaging improvement, GraphRight should be a hit for scientific and engineering users who can take advantage of its statistics abilities and API. Graphity stands as a testament to the power user: Those who wish to push the envelope of graphing capabilities should approach the app prepared for serious fun. ♦

SETH ROSS is a NeXTWORLD contributing editor and publisher of San Francisco-based Albion Books.



GraphRight rapidly calculates and displays statistical information like regression lines.

light sources. This is first practical application of NEXTSTEP's Render-

Man engine that we've seen outside of dedicated 3-D programs. associated with Graphity's expanded functionality. The app is the most

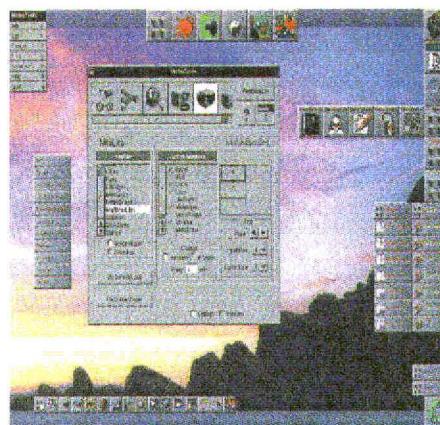
Coming of Age

MetroTools does an excellent job of plugging the holes in the NEXTSTEP environment by providing several important missing tools, among them a Dock extender, a screen saver, font and sound importers, a file locator, and an archiver. Included in this package are several modules that would make strong utilities if released on their own. The fact that they are all included in a package that sells for \$89 makes MetroTools an incredible bargain. The software has evolved and is now mature in its 2.1 release.

The Dock extender in MetroTools has developed into one of the most powerful on the platform. With Engage! taking on a desktop metaphor in its most recent incarnation, the MetroTools AppLauncher is also the closest in both concept and execution to NeXT's original Dock, and takes the concept to its logical conclusion. You can choose to extend

the existing Dock with hierarchical subdocks, separate horizontal or vertical docks anywhere on the screen, or hide the Dock completely and bring it up later with a click. AppLauncher docks can also contain files, folders, and UNIX shell scripts, serving as a replacement for the Shelf.

NiteLite is reminiscent of AfterDark, the popular screen saver for the Mac and Windows. The included modules, with the exception of a full-



MetroTools enlivens a workspace with screen savers, backdrops, and customizable docks.

featured clock that includes audible voice alerts, are merely adequate and lack the entertainment value of the flying toasters and fireworks found on other platforms. Luckily, NiteLite can use the many modules written for the popular but not fully featured BackSpace shareware utility. NiteLite modules can be run either as screen savers or as backdrops. Any screen saver can lock the screen until you supply your login password. An API is available for writing your own screen savers, but we'd like to see the capability to import AfterDark modules, much as you can import sounds and fonts.

The other tools, while not as flashy, provide important compati-

bility features, such as the ability to import Macintosh sounds and fonts into the NEXTSTEP environment. The file locator and the archiver are icing on the cake.

With Version 2.1, MetroTools becomes network savvy, with new features for mixed networks that contain both NeXT and Intel computers. Loading MetroTools from a network server is much faster than in previous versions.

While providing a fun and functional package for end users, MetroTools hasn't forgotten the developers. MetroTools has always provided the ability to write your own screen savers, but now you can use its new API kit to put a slick NEXTSTEP front end on your own utilities. Utilities that you develop will appear within the MetroTools application complete with integrated on-line help.

Metrosoft has continued to improve its flagship product, while supporting its users with free upgrades. We look forward to the continuing evolution of MetroTools. ♦

by LEE SHERMAN

MetroTools 2.1



The latest version of Metrosoft's utility package is a winner with feature enhancements, improved performance, support for mixed networks of black and white computers, and an extended API that opens up the app.

\$89

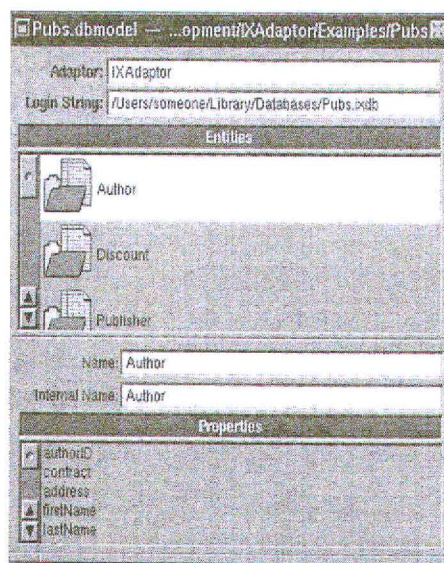
Metrosoft, 710 13th St. #310, San Diego, CA 92101. 619/488-9411; info@metrosoft.com.

Data But No Base

While NEXTSTEP comes with free DBKit adapters for Oracle and Sybase, the \$5000 to \$20,000 cost of the databases themselves places them out of reach for all but the most committed developers. Many NeXT programmers interested in experimenting with DBKit simply can't afford to shell out big dollars to decide if DBKit is the right choice. Now, thanks to VNP Software, they don't have to.

IXAdaptor is a DBKit adapter that doesn't need a database. Instead of connecting over a network to an Oracle or Sybase server, IXAdaptor stores its data locally in the UNIX file system using the NEXTSTEP Indexing Kit. This is the same database engine used by Stone Design's DataPhile, and IXKit offers similar performance and operational restrictions.

IXKit is designed for single-user database applications. It's ideal for developing a database app or simply



IXAdaptor uses the standard NEXTSTEP DBModeler to create database schema.

learning the ins and outs of DBKit.

To create a database for IXAdaptor, you simply build a DBModel with NeXT's DBModeler. For the database "Login String," you supply the name of the file in which the database resides. When you first use the database with InterfaceBuilder, IXAdaptor asks you if you want to create the database. The adapter automatically indexes for any attribute designated as a primary key or

specified in a relationship.

In addition to supporting all of the features required by DBKit, IXAdaptor also provides the four basic SQL verbs: SELECT, UPDATE, INSERT, and DELETE. But IXAdaptor offers only a single level of transaction protection, which means that once you issue a BEGIN TRANSACTION command to protect a series of statements, you cannot have a second nested transaction. In practice, this limitation is only a problem when programming directly in SQL, since DBKit never attempts to nest transactions.

IXAdaptor comes with a single administrative tool, IXATool, which

will either dump the contents of an IXAdaptor database into a dump file or load a dump file back into a database. The dump-file format is a series of SQL statements that should make it easy to move an IXAdaptor database into a client-server system if you need to. In many applications, however, IXAdaptor is probably faster than a client-server system, and the data is stored locally. IXAdaptor handles blobs the same way as Sybase. The adapter should not be used over NFS; it is not thread-safe.

IXAdaptor provides no security other than what is provided by the UNIX file system to store the actual database file. And if you want several users to access a database simultaneously – even if only one of them is going to be actually writing data – you can't use IXKit unless you write your own database server.

Documentation is a bit on the skimpy side, and installation, during which a symbolic link is created in the user's ~/Library/Adaptors directory, can go awry. ♦

by SIMSON L. GARFINKEL

IXAdaptor 1.0



A bare-bones DBKit adapter that connects to NeXT's Indexing Kit. Good for single-user applications or as training for programmers learning DBKit.

\$245 per user

VNP Software, 10A Garner Rd., Cambridge, MA 02139. 802/496-7799, 802/496-7790 fax; IXAdaptor_Info@vnp.com (for a demo copy, IXAdaptor_Demo@vnp.com).

Monitor Importance

Box Score User

System design



**WHY WOULD A PERFECTLY SANE AND
PROFITABLE COMPANY TAKE A RISK WITH
OBJECT-ORIENTED NEXTSTEP?**

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GARFINKEL

To CERTAIN COMPANIES, choosing an object-oriented system years before it's available from the industry giants seems like a risk.

To others, though, passing up a compelling competitive advantage presents a far more dangerous risk.

So they use NEXTSTEP™ for Intel®

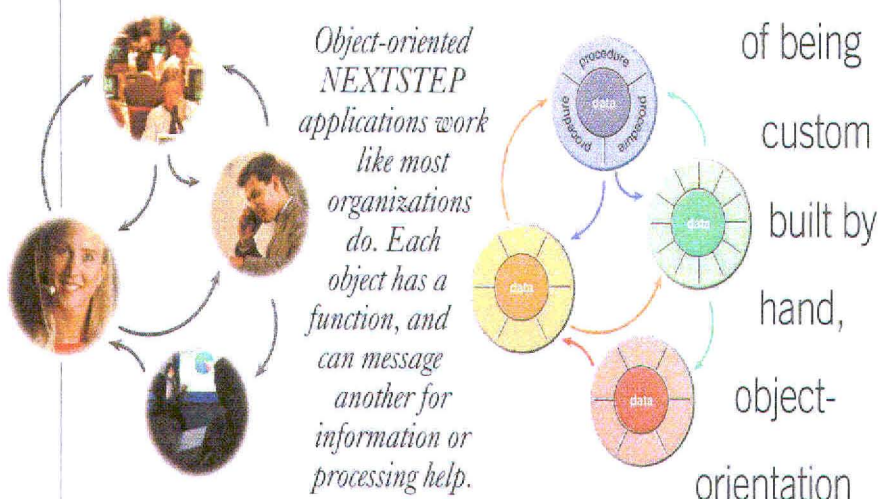
Processors—the first and only *NEXTSTEP* conserves your most valuable resource.

operating system and development environment

optimized for objects from top to bottom.

It's really the software equivalent of the Industrial Revolution.

Just as modern factories allowed products to be built from prefabricated component parts instead



lets developers build complex applications by using prebuilt software components. The result—mission-critical custom applications that can be developed up to ten times faster.

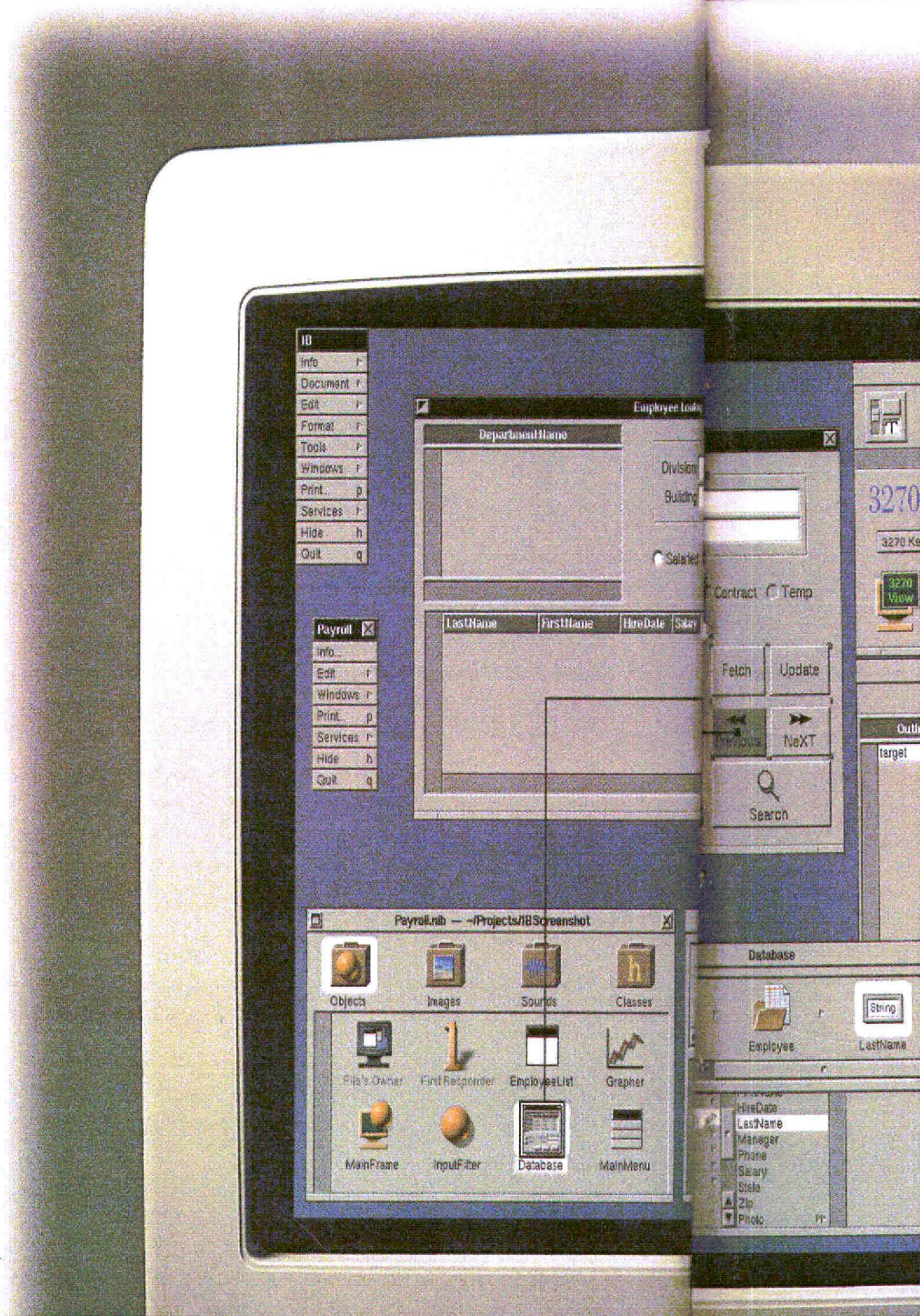
Every NEXTSTEP application is comprised of independent and easily accessible objects that encapsulate both the code and data for individual

program functions. So there's no danger of breaking an application when all you want to do is update a single function. This structure allows you to evolve your custom applications to quickly exploit new business opportunities, since it lets you leverage past efforts by reusing or modifying objects you know to be tried and true.

Even before you start to build a custom

application in already finished a library of objects of the function most programs text editing, p graphics, col Our Interf more than m an ordinary “ complex ente

THE OBJECT IS FASTER



Monitor Importance

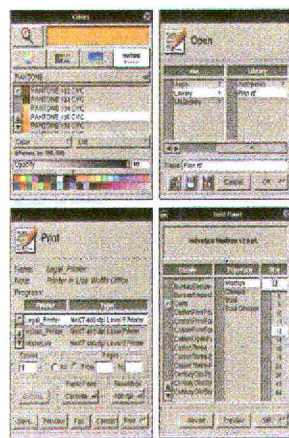
Box Score User

System design

application in NEXTSTEP, much of your work is already finished. Because NEXTSTEP comes with a library of objects representing over 80% of the functionality that is common to most programs — including objects for text editing, printing, faxing, sound, 3D graphics, color selection and more.

Our Interface Builder™ gives you much more than mere prototyping tools. Unlike an ordinary "screen painter," it lets you construct complex enterprise applications graphically,

manipulating real objects and not just images. You can even add new objects which are automatically recognized by the system. NEXTSTEP also comes with object kits such as the Database Kit™, which lets you assemble data-intensive applications without worrying about how your database is structured. Simply connect your custom application to an "adapter" object (Oracle and Sybase adapters are included) and it just works. NEXTSTEP, however, is only the tip of the object



NEXTSTEP provides a full set of objects for features common to most programs, from printing to faxing.

iceberg. Because it offers so many rich opportunities for new,

more sophisticated software, it's already spawned an entirely new industry: ObjectWare™.

There are now over 1,400 NEXTSTEP objects available from more than a hundred object vendors. So when you write NEXTSTEP applications, you have fast access to pre-written, rock-solid objects for an exciting world of advanced functions, from text-to-speech to data feed and bar codes.

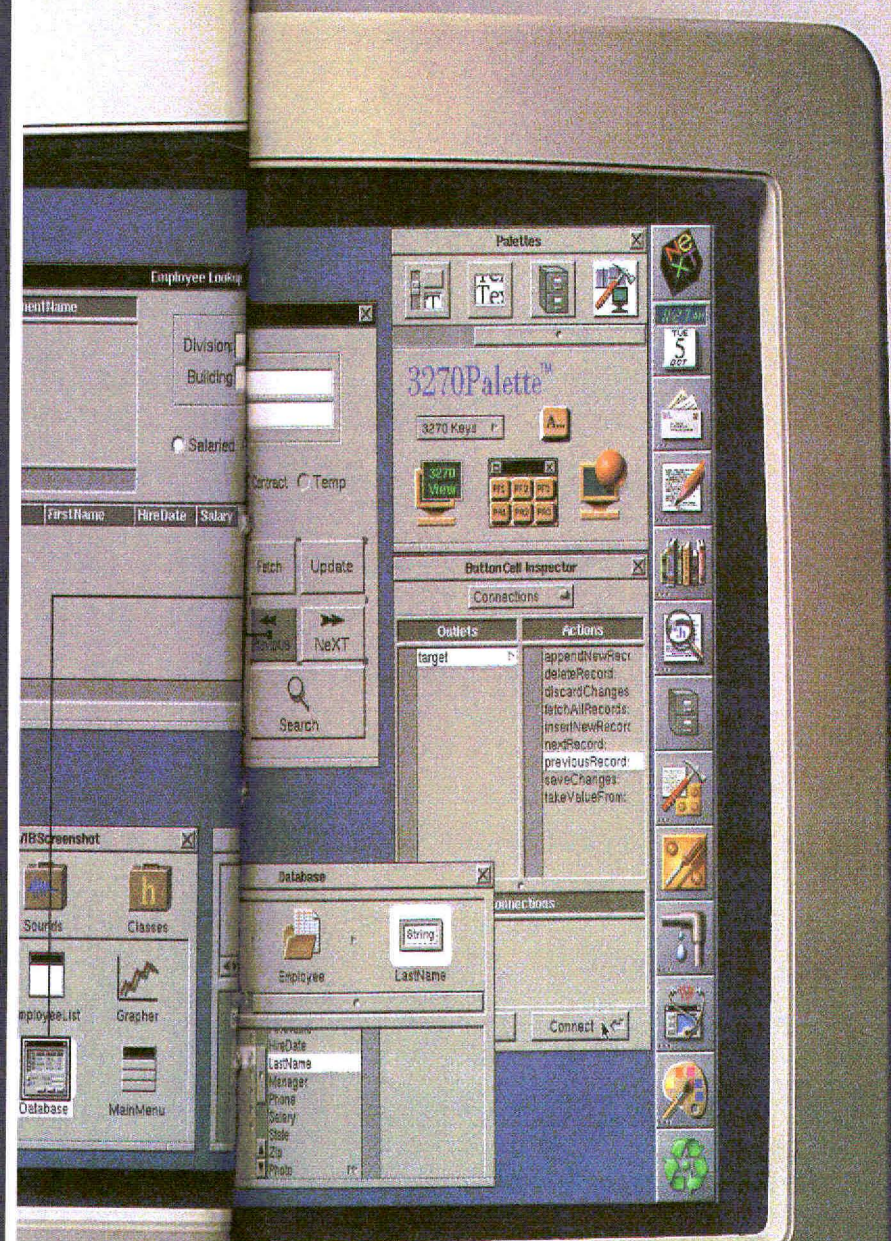
Of course, faster and better ways to develop don't mean much unless you can distribute your applications throughout your company.

CC++
OBJECTIVE

We provide objects and tools for building advanced client/server applications, and support for Objective C, C++ and ANSI C.

So stay with us for just a few pages more. We promise to make this fast.

FASTER DEVELOPMENT.



To BUILD A CUSTOM CLIENT/SERVER SYSTEM, you would normally pick an operating system and then go scavenging for the development tools to make it work. NEXTSTEP offers a new approach. In one shrinkwrapped box, you get one unified environment, including operating system, development

Object•Enterprise combines NEXTSTEP with Hewlett-Packard's 9000 product family, allowing you to develop and deploy custom object-oriented client/server applications across the entire enterprise, from desktop to data center.

tools, integrated applications, database access, full networking and more. It's everything you need to build advanced client/server systems.

NEXTSTEP lets you deploy the benefits of object technology throughout your organization, it doesn't make you sacrifice even one of your standards.

Built upon a solid, robust foundation of UNIX®,

NEXTSTEP integrates the desktop completely, allowing X, Windows, MS-DOS, IBM

3270 and AS/400 applications to co-exist, sharing data and services with

NEXTSTEP applications. That way your legacy apps maintain their value and all your Windows,

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THE OBJECT IS SEMLE

About the only thing it doesn't come with is risk: While it raises development

networking and file standards remain intact.

NEXTSTEP Release 3.2 even comes complete with SoftPC from Insignia*, which contains the code Microsoft® uses to emulate Windows applications on Windows NT. So, powered by a 486 or Pentium chip, NEXTSTEP can run shrinkwrapped Windows

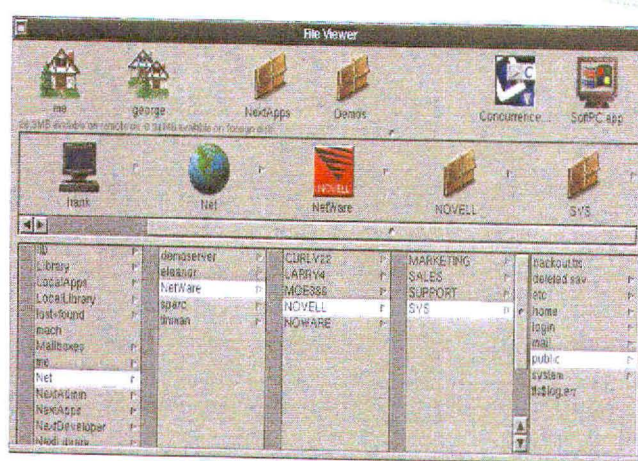
apps at near-native speed.

NEXTSTEP also gives you full support for TCP/IP, NFS, GOSIP, POSIX and Novell networking standards, with Macintosh® and MS-DOS file system compatibility. Its greatest power, though, is

the power it delivers to your company's users.

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standards by an order of magnitude, NEXTSTEP runs on standard Intel 486 and Pentium® machines from such leading names as Dell, Compaq, NEC, Hewlett-Packard, Digital, NCR and Epson. (It's available pre-loaded on many models.) And even though

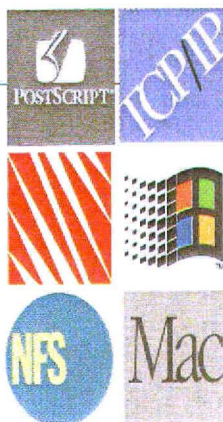


In the graphical world of NEXTSTEP, a user can access information across standard networks without having to worry about the complexities of getting there.

Monitor Importance

Box Score User

System design



NEXTSTEP supports just about every standard in the civilized world.

Because the system provides a set of objects common to all applications, the graphical interface remains simple and consistent from application to application. Your custom software integrates perfectly with shrinkwrapped NEXTSTEP productivity applications, as well as with all the popular DOS and Windows applications — including full cut-and-paste capabilities.

So user acceptance goes up, and the need for costly user training goes down.

NEXTSTEP not only offers the most advanced

between applications, between users, even across networks. By tapping the power of PDO (Portable Distributed Objects), you can actually develop objects on a NEXTSTEP client and deploy them in completely different systems, so servers can utilize the same power.

And while NEXTSTEP can deliver all of the advances of a revolutionary technology, it can also offer the day-to-day dependability of a tried-and-true system. Because that's exactly what it is.

Already in its third release, NEXTSTEP

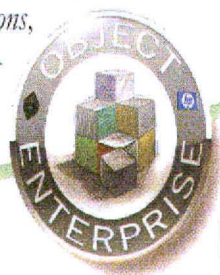


SEAMLESS DEPLOYMENT.

computing environment, it comes complete with sophisticated bundled applications that can bring even greater productivity to the organization.

NeXTmail™ is built into the system, giving all connected users

Objects are a far bigger idea than any one computer. PDO can send messages across applications, across offices or across a whole planet — so information can stay up to date across the entire enterprise.



access to drag-and-drop multimedia mail (it's fully compatible with UNIX mail). The complete Websters® dictionary and thesaurus can be consulted at any time, from any application. And spell-checking is a system object that can be summoned by any application that requests it.

NEXTSTEP objects, in fact, can send messages

is polished, perfected and proven in the most demanding companies all around the world. (A comparable system from the giants of the industry—or anyone else—remains at least two to three years away.)

So now you've seen how NEXTSTEP brings dramatic gains to both development and deployment. At least you've seen it in theory.

NEXTSTEP for Intel Processors runs on industry-standard 486- and Pentium-based machines from the world's leading computer makers. It's even available pre-loaded on many models. Just ask.



If you can stay with us for one more page, we'd be delighted to show you how it works in real life.

A GROWING NUMBER OF COMPANIES have seen the gains to be made with a complete object-oriented system of software. Rather than buy a vaporous promise for the future, they've chosen real objects now: with NEXTSTEP. And practically overnight, they've begun to reap the benefits.



Even the press is impressed. NEXTSTEP has been universally praised as the only real object system.

At McCaw Cellular, NEXTSTEP was employed to develop a new customer service system that manages all interaction with McCaw customers, distributors and dealers — a system that will ultimately be deployed to about 4,000 users.

With less code required, they estimate their first application was completed in about one-third the time it would have taken using OSF MOTIF or Windows. And as they build a library of airtight objects, they expect future applications to take even less time.

At Swiss Bank Corporation, one of the world's leading options trading companies, NEXTSTEP has helped build a product line of consistent and easily maintained financial services applications. The sheer speed of NEXTSTEP development allows them to enter new markets with innovative financial products—and stay well ahead of the competition.

Chrysler Financial evaluated tools like Windows and PowerBuilder™, but they chose NEXTSTEP. They found that there was nothing comparable for application development or database interface. Plus, NEXTSTEP lets their users run custom and shrinkwrapped apps in one consistent way.

The retail portion of their business is mission-critical,

At McCaw Cellular, NEXTSTEP was employed to develop a new

THE OBJECT IS THE A

NEXTSTEP is probably the most respected piece of software on the planet. —Byte Magazine, August 1993

LA COUNTY SHERIFFS DEPT

ABBOTT LABORATORIES

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Monitor Importance

Box Score User

System design

so they're using NEXTSTEP software to create a system for processing automobile loans and leases at 100 financial centers spanning North America. By first creating generic business and financial objects, they expect to streamline future projects by sub-classing these into other objects—all of which can easily be updated across the organization.

PanCanadian Petroleum Limited was 90% down the road to standardizing on Windows with PowerBuilder in creating their client/server development environment when they discovered NEXTSTEP and made the switch.

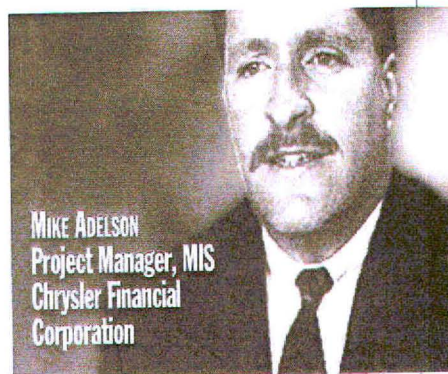
Within two months, they were actually farther along in

their project, thanks to the object-oriented power of NEXTSTEP.

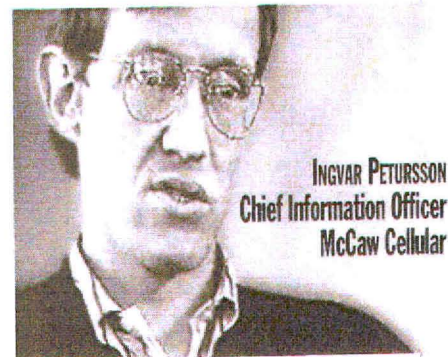
Now they believe they have

gained a two-to three-year lead over competitors who have decided to wait for object technology from other sources. And they're using NEXTSTEP to deploy applications to 1,000 users, delivering the necessary information to every professional practice in their business of oil and gas exploration.

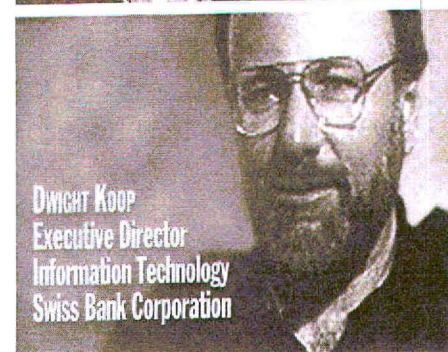
As you can see, NEXTSTEP object-oriented software is now paying dividends in companies from completely different industries. Which proves that in the world of business, there is one thing that every company can use: a competitive advantage.



MIKE ADELSON
Project Manager, MIS
Chrysler Financial
Corporation



INGVAR PETURSSON
Chief Information Officer
McCaw Cellular



DWIGHT KOOP
Executive Director
Information Technology
Swiss Bank Corporation

...a platform for building and distributing applications, NEXTSTEP brings more to the party than any other operating system. —Network Computing

IS THE ADVANTAGE.

We've shown you how object-oriented NEXTSTEP is helping many companies develop and deploy custom applications faster and better.

Now we invite you to get a better understanding of how NEXTSTEP can help streamline the most important company in the world: yours.

Just call us at 1-800-TRY-NeXT. We can send you hardware requirement sheets, white papers or technical evaluations, as well as full NEXTSTEP specifications.

GET A COMPLETELY OBJECTIVE POINT OF VIEW.

We can also tell you about NEXTSTEP seminars that may be scheduled for your area, and give you the name of a nearby NEXTSTEP representative or reseller.

Our goal is to give you the insight you need to build a powerful competitive advantage. And that, no doubt, is the most important object of all.

1-800-TRY-NeXT



THE OBJECT IS THE ADVANTAGE.™

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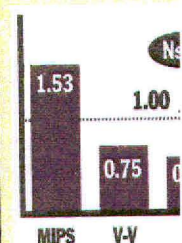


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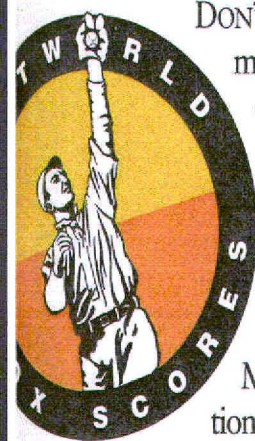
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PHOTOGRAPHS BY SH

Monitor Importance



DON'T OVERLOOK THE MONITOR WHEN YOU DECIDE WHICH INTEL machine to buy. Few things can adversely impact the productivity of a user more than a flickering, blurry monitor. Because it displays complex images at high resolution, NEXTSTEP relies on a crisp screen. Here are some tips. Monitors with the smallest dot pitch are better. Look for a bright monitor with a lot of screen contrast. Blacks should be opaque and the whites should be bright. Make sure the monitor is capable of the maximum resolution and color depth you ever expect to use with your computer, including any graphics card or VRAM upgrades you may make.

Depending on your applications, the screen should have good color fidelity. Try putting up swatches of color and compare them to known color standards. The shadow mask, myriad tiny black holes that the pixels shine through, should not be visible. The screen should not reflect room light.

Many monitors can be tuned, allowing you to adjust the picture. This is important if you use the computer for both native Microsoft Windows mode and NEXTSTEP. Each seems to drive monitors differently.

Make sure the monitor tilts and swivels easily. Turn it on in a quiet room and make sure it doesn't make an annoying buzz. It shouldn't be unduly heavy. Also, remember that some monitors require surprising depth.

Finally, choose the largest monitor you can afford, but don't forget that a smaller, high-quality monitor is better than a large, bad one. We suggest at least a 16-inch color monitor for NEXTSTEP. And don't forget to only buy a monitor with a money-back guarantee. ♦

by DAN LAVIN

Box Score User

Lexar NSCStation IDE

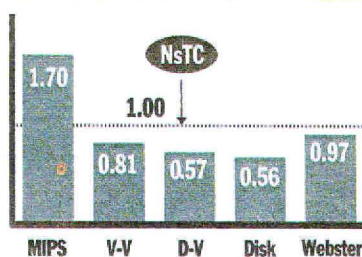


\$5699 plus \$850 CD-ROM (as configured without software)

Configuration

DX2/66; 32MB RAM; 350MB IDE drive; 1024-by-768, 16-bit S3 Actix graphics; 3 ISA and 2 VL-Bus slots open; 17-inch color monitor (flat screen, low radiation); ProAudio sound card.

NeXTWORLD benchmarks



Performance

Fast machine with good performance held back by very slow IDE drive and slowish graphics.

Video

A good-looking, flat-screen, low-radiation monitor. Slow S3 graphics hamper this machine.

System design

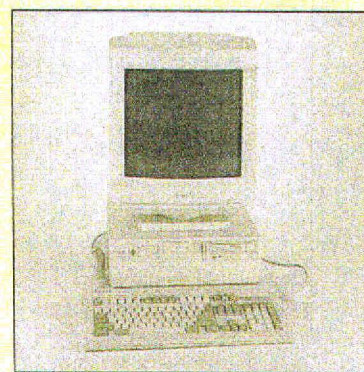
Attractive, quiet pizza box. Mushy keyboard, good Logitech mouse.

NEXTSTEP orientation

Actively selling into NeXT market. NEXTSTEP preinstalled. Savvy tech support.

Support

Very good. One year on-site parts and labor. 30-day guarantee to run NEXTSTEP, no unconditional money-back. Peripherals are manufacturers' warranty.



Value

Good value for solid machine with lots of extras, like a sound board and a great mouse. Could use a SCSI drive and faster graphics.

Contact

Lexar, 6A S. Gold Dr., Robbinsville, NJ 08691. 609/890-9000, 609/890-3179 fax.

Box Score Developer

Alpine NX Tower (manufactured by Lexar)

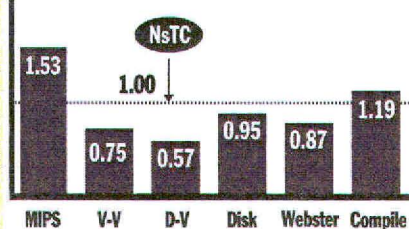


\$5699 (without software)

Configuration

DX2/66; 32MB RAM; 1GB SCSI disk; 1024-by-768, 16-bit S3 graphics; 2 VL-Bus and 6 ISA slots; 17-inch color monitor.

NeXTWORLD benchmarks



Performance

Good raw performance. Slowed slightly by middling SCSI disk.

Video

Bright monitor. S3 graphics significantly slows an otherwise excellent machine.

System design

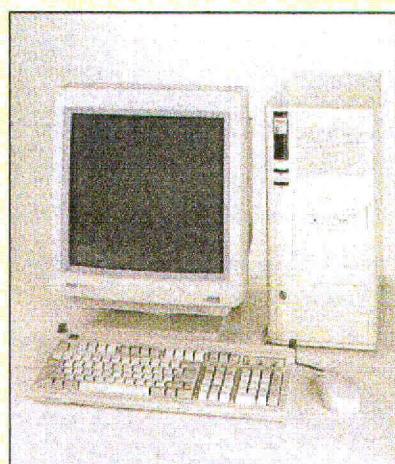
We like this machine. Less hassle than many towers to open and service, but slightly noisy.

NEXTSTEP orientation

Sells directly into NeXT market with preinstalled software. Knowledgeable tech support.

Support

Very good. One year parts and labor on-site. Guaranteed to run NEXTSTEP for 60 days, but not an unconditional money-back guarantee. Peripherals are manufacturers' warranty.



Value

Very good price. Big disk, good monitor.

Contact

Alpine Computing MicroAge, 6066 S. State St., Salt Lake City, UT 84107. 801/268-8877, 800/748-4558.

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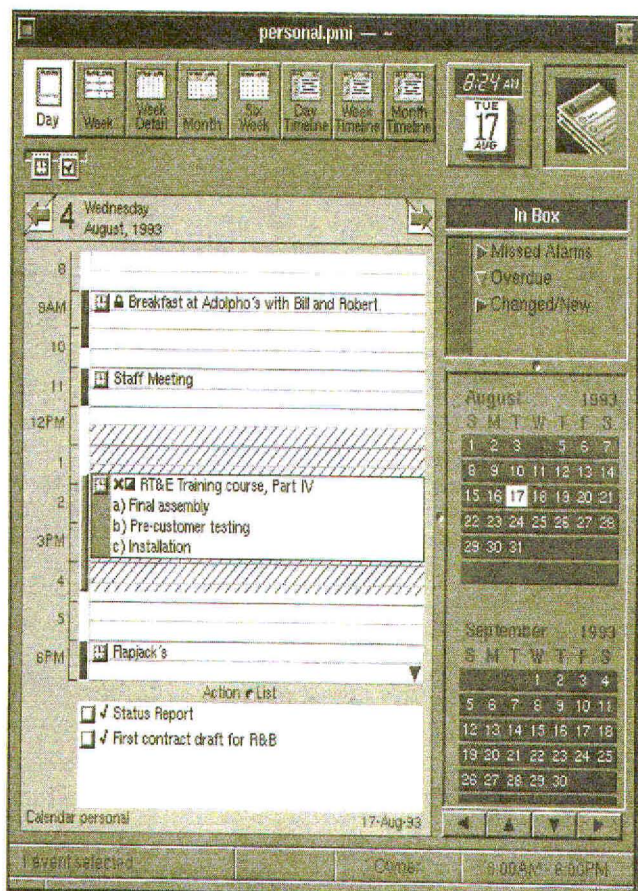


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Professional Color

If you have ever carefully prepared a color document, only to see your images appear washed out, you know how much anguish color publishing can cause.

To solve this and similar problems, HERE (High-End Raster Experts) has released an easy-to-use, full color-management package, HERE's Color, and a series of limited color-management utilities, HERE's Color CRDs.

HERE's Color looks at a profile of your scanner, monitor, and printer and then goes to work like a plastic surgeon to fix defects and improve the appearance of your images at all stages of production. It will correct a scanned image for the idiosyncrasies of a particular scanner, adjust the monitor, and display an image on the screen for soft proofing — how a selected printer would print the image. It will also adjust the output of a color printer so that it reproduces an image as accurately as it physically can.

To profile a scanner, you slip a special supplied target image into it,

HERE's Color 1.002



HERE's Color makes color management easy, flexible, and powerful. HERE's Color works best with PostScript Level 2 devices but has a few workarounds for earlier PostScript models. It's the only color-management system on the market that lets end users easily create their own color-rendering dictionaries.

HERE's Color: \$895; HERE's Color CRD: \$400 for NeXT Color Printer, \$800 for Tektronix Phaser III PXi

HERE, 8060 Finley Lane, Cincinnati, OH 45242. 513/792-0442; info@here.com.

they are calibrated.

Output-device profiles, called Color Rendering Dictionaries (CRDs), are more difficult to create, but HERE's Color ships with 15 profiles, allowing you to use one of the prepared profiles if you are using a machine with one of the CRDs on the list. "Lite" versions of HERE's Color include just one CRD (for the NeXT Color Printer or the Tektronix Phaser III PXi, for example) and do not provide the ability to characterize your own output devices or create your own CRDs.

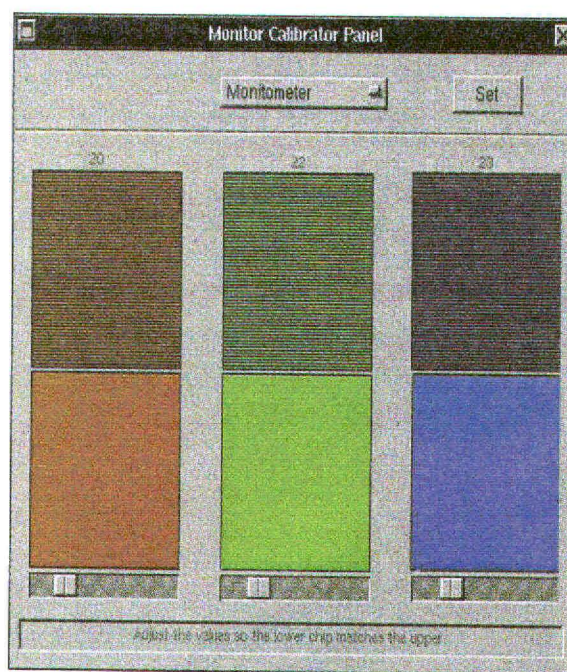
They costs less, however, than the full program.

With your devices profiled and brought within the closed loop of the color-management system, several valuable tools become available. You can check an image, preview it on-screen, and then simply print with the new Use Level 2 Printer Calibration option checked. HERE's Color handles the rest invisibly in the background. Your printing takes slightly longer, but the performance hit is minimal and will not affect your

workflow.

If you need color fidelity in your NEXTSTEP work, you will need to spring for HERE's Color. At \$895, you can have the same color-management capabilities as users on Windows or Mac systems. ♦

by RICK REYNOLDS



HERE's Color allows users to fine-tune color calibration by matching monitor specs.

save it as a TIFF file, and drag that file into a window in HERE's Color. Users only have to do this once.

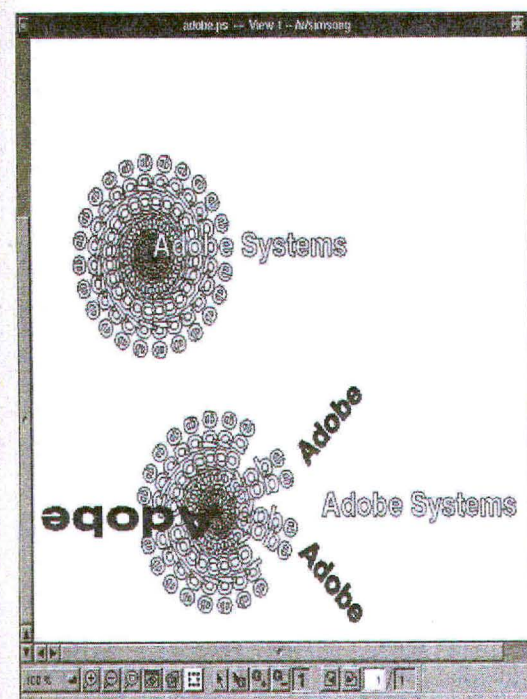
Adjusting the monitor is a two-step process. The first panel asks you for the color values for your display (available from the manufacturer), or you can opt to use the app's default settings. The second step provides you with three pairs of colors that you adjust with a slider bar until

Fits Like a Glove

Tailor is a phenomenal utility that makes it easy to do what many people once considered impossible: sensibly edit PostScript printer files generated by other applications.

When you run Tailor on a PostScript file created in any other program, the software automatically finds all of the text and graphical objects. Tailor then lets you edit these graphics directly on the screen without requiring you to have any knowledge of PostScript. Finally, you can save the modified PostScript files, creating a new document.

Suppose, for example, that you have an old PostScript file for an advertisement that ran over a year ago, but you no longer have the original document. Using Tailor, you can open the file, copy out any logos or spe-



With its powerful feature set, Tailor provides the capability to edit PostScript files for any intended effect.

cial graphics, and paste them into another application using the standard Copy and Paste commands. Or you could simply change the text and move objects around. Tailor can also scale, rotate, or skew any text or graphic.

Tailor is also a drawing program, with commands to draw circles, squares, lines, and text. You can group or ungroup objects, control layering, and magnify artwork up to 6400 percent. You can even paste PostScript files from other NEXTSTEP applications, as well as TIFF and EPS images, into a Tailor document.

Tailor works equally well with PostScript files that were handcrafted, generated from other NEXTSTEP applications, or produced from appli-

Tailor 1.0c



Tailor allows full manipulation and editing of PostScript files. It is an exceptional program with functionality unknown on any platform. Highly recommended.

\$495; 50-percent educational discount

First Class NV, Avenuesdreef 32, 9031 Drongen, Belgium. 32/9/227-6248, 32/9/227-1589 fax; peter@firstclass.be. In North America, Alembic Systems International, 14 Inverness Dr. E., Ste. G228, Englewood, CO 80112. 303/799-6223, 800/452-7608, 303/799-1435 fax; info@alembic.com.

cations running on Microsoft Windows or a Macintosh. Most impressively, it even knows how to decode PostScript looping constructs and conditionals. The only PostScript file that it failed to understand was a 300-page TeX document, but that's not a major failing: People who use TeX deserve what they get.

Only a few features are missing from this otherwise stellar program. Unlike most drawing apps, Tailor lacks a grid for alignment and for sizing objects to a uniform size. You also can't change the background or color of a TIFF – even single-bit images. While Tailor has unlimited levels of undo and redo, it has no way to select an object and return it to its original position, proportions, or orientation.

Tailor's on-line manual would be considered well written if the program were produced by a U.S. software publisher. Compared with other European vendors that have tried to sell into the U.S. market, it is exceptional, but the lack of printed documentation is still a failing. A simple eight-page manual could substantially ease installation.

We tested Tailor 1.0c. With the exception of a single bug in the program (occasionally, Tailor's Inspector panel did not switch to show a Text inspector when we selected a block of text), this program appeared flawless.

Tailor all but eliminates the need for graphic-design firms to have a staff member who knows Adobe's sometimes-cryptic PostScript language. Use it just once, and you'll never go back to editing PostScript with EMACS. ♦

by SIMSON L. GARFINKEL

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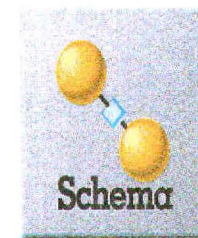
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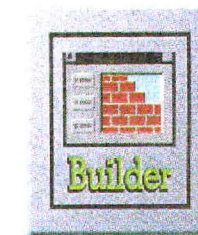
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Bud Tribble

above the language dependencies, and you define interfaces to objects in terms of the Interface Definition Language (IDL). Then you have bindings from IDL to a variety of languages. You shouldn't have to know what particular language an object is implemented in.

In the procedural world, I can call a library, and I don't know whether it's written in C or assembly language or Fortran or Pascal. In the object world, we have to get to that stage.

Another issue is the imaging model. NEXTSTEP runs with the Display PostScript (DPS) server and Solaris uses an X Windows DPS server.

If you are going to have X Windows and DPS windows on the screen at the same time, you don't want two different mechanisms to handle those windows. We will support the same DPS calls that NeXT does. Now, for some of the things, like the window management, NeXT has extended DPS. We will stick to the Adobe DPS. For the window management, we will do that through the AppKit calls, which is what everyone does anyway.

R E S O U R C E A L L O C A T I O N

All this may be feasible, but it still takes work. What are the resources at NeXT for the SPARC port and the OpenStep implementation?

Well, first of all, welcome to the software business. NeXT has a lot less to do than they used to. In terms of the native NEXTSTEP port to SPARC, yes, NeXT has work to do. They're actually getting pretty good at that, now that they've done Intel and PA-RISC. They're building up some expertise. In terms of the OpenStep implementation on Solaris, we're clearly the experts on Solaris and DOE. My group will provide the lion's share of the work required to port to Solaris.

We've talked about different components of NEXTSTEP. What about different versions, such as future releases beyond 3.2?

The companies expect to work closely together as we go forward, though

we are not committed to staying in lockstep. OpenStep today is a good core set of interfaces, but clearly you don't want to stand still. NeXT has a lot of good ideas that we at Sun are in a good position to work with them on. We can either adopt those or do our own implementation when they come out.

Is this relationship your major responsibility here at Sun?

What I run is the DOE program, which was a preexisting program, and I took it over about four months ago and consolidated it. Prior to that, I was running the CDE program.

There is a lot of speculation that this is what you had in mind all along when you left NeXT, or even that you were actually sent by Steve Jobs. What's the truth?

You'll remember that at the time I came to Sun, NeXT was a hardware company. Clearly, there was no possible way that, given that situation, the companies could have gotten together. It was not even contemplated at NeXT at that point to become a software company.

So if you are asking was this all somehow planned out, absolutely not. At the same time, once NeXT did decide to become a software company, that set the stage for the possibility of synergy between Sun and NeXT.

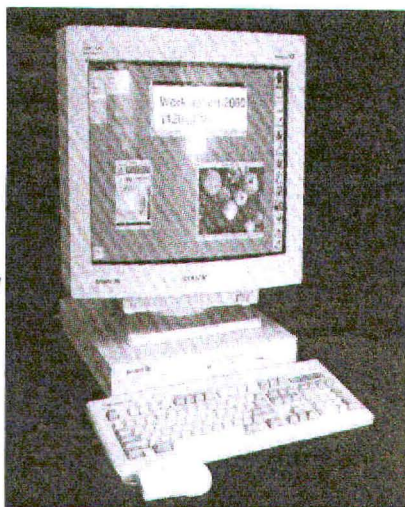
In this deal, NeXT becomes a technology provider. In your view, to what extent do they continue as an independent platform provider and operating-system company?

At SunSoft, our business model is to do both – sell a complete operating system and also license people the technology – and we find it a very viable model. We will sell you an operating system, Solaris, and that's a very good business. We will also sell you component technologies, NFS or the Common Desktop Environment or whatever, and that's a good business as well. It works for us, and I think that could be a fine business model for NeXT as well.

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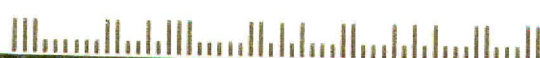
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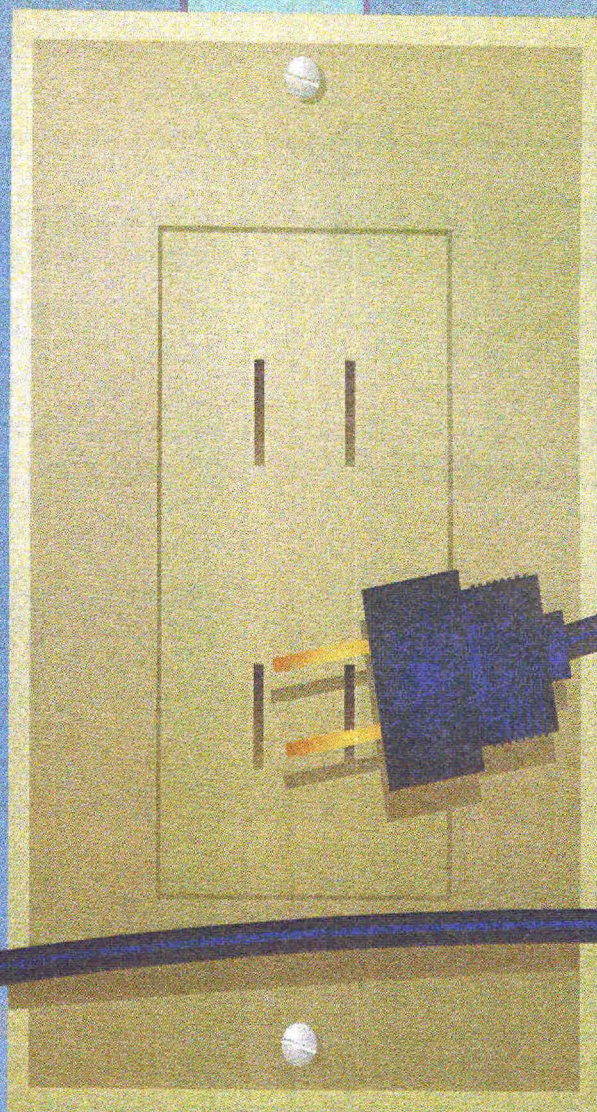
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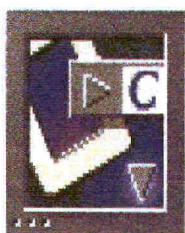
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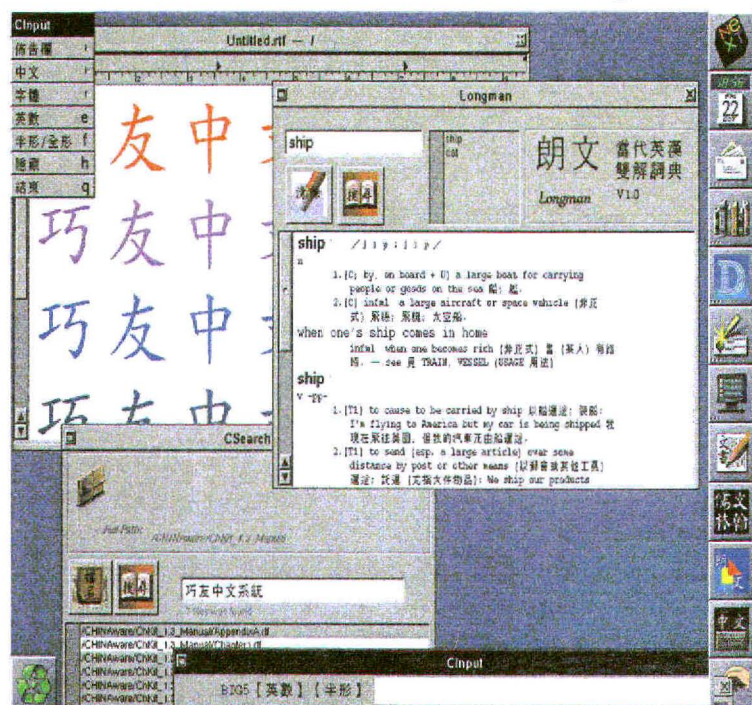
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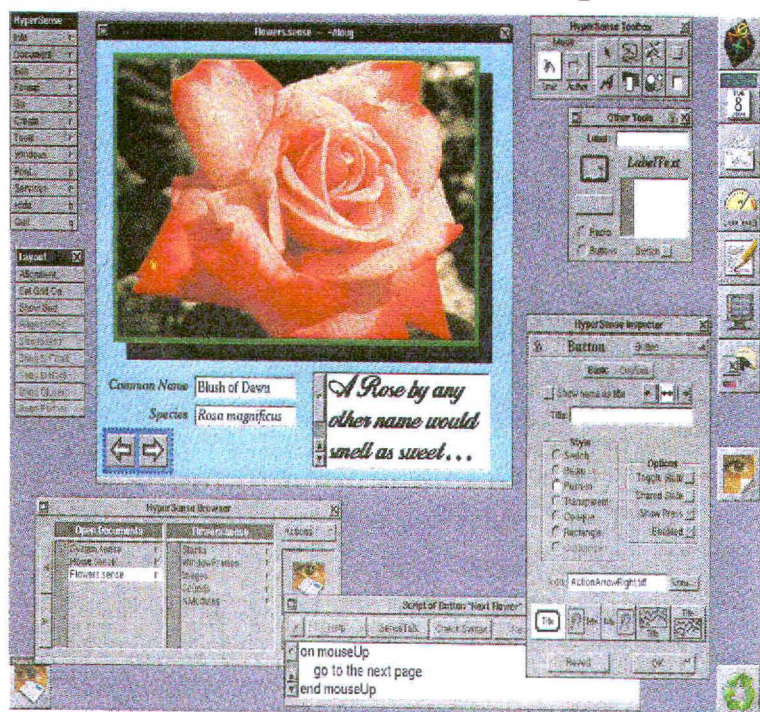
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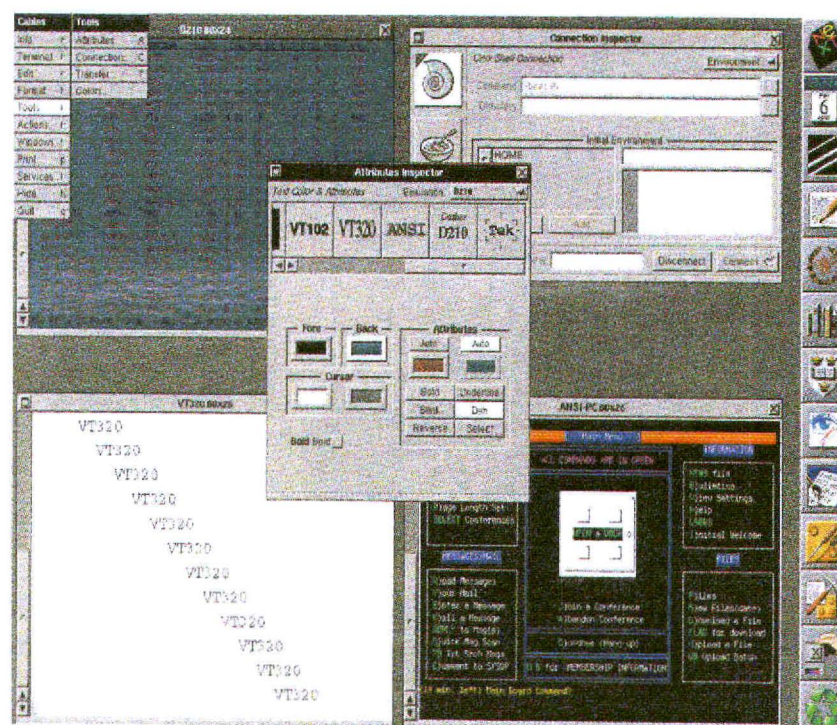


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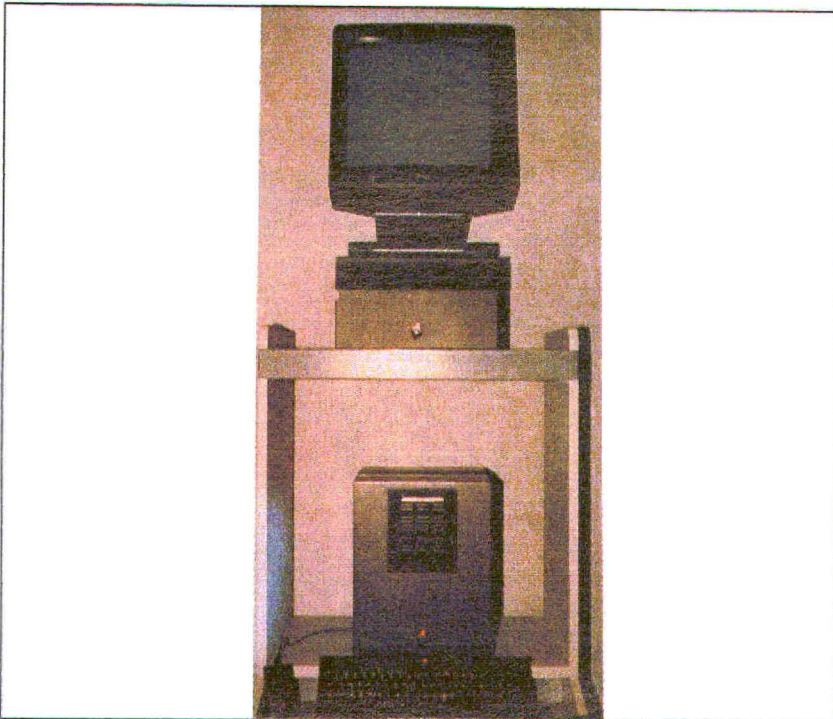
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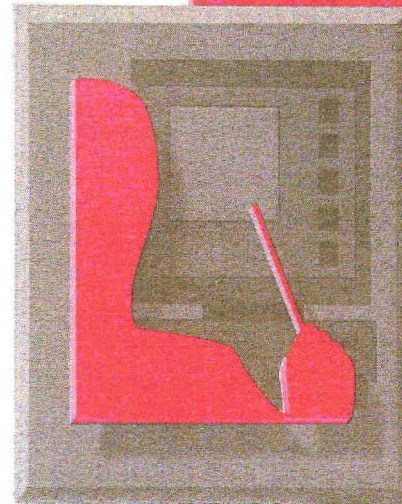
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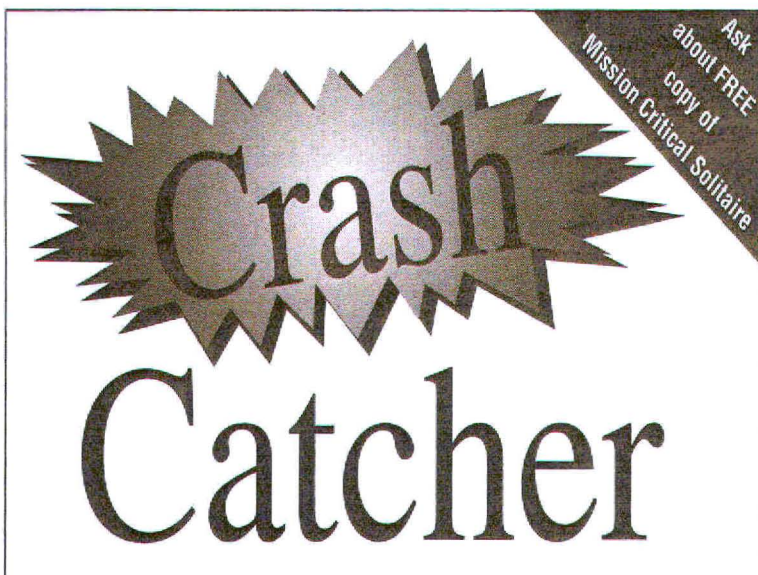


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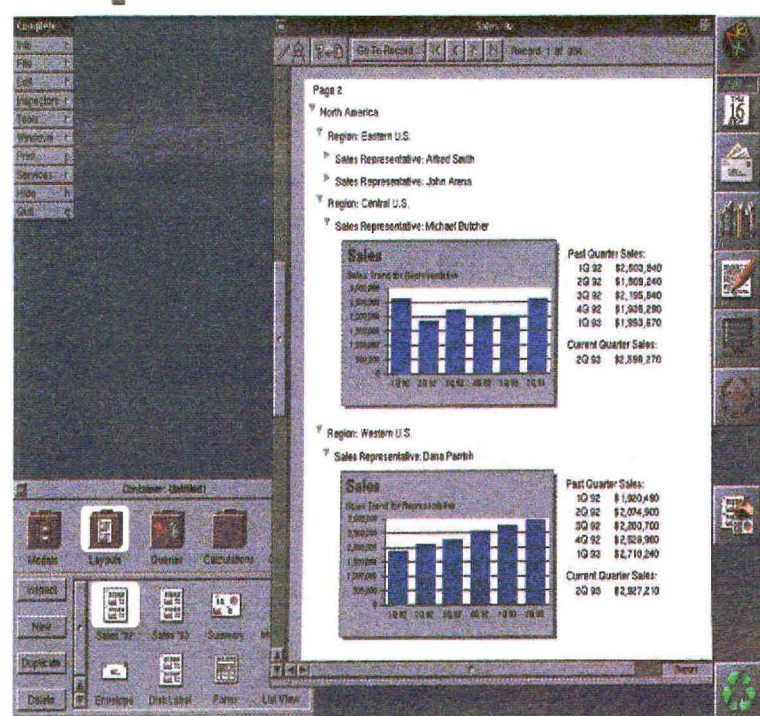
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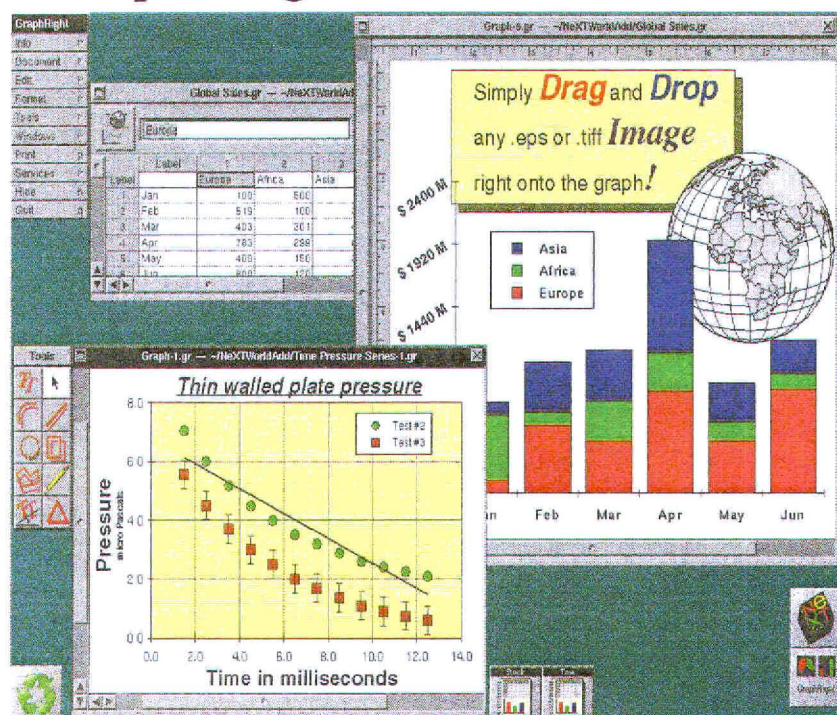
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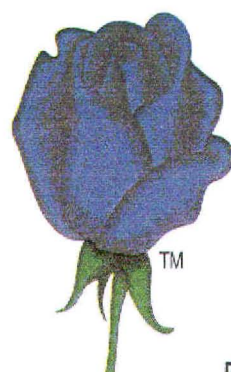
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The absence of alternatives clears the mind marvelously."

So Henry Kissinger is reported to have replied when asked why two zealots of such toxic pride as Menachem Begin and Anwar Sadat would ever sit down and reason together. The answer was obvious. Each needed so desperately what the other had that saving face had finally started to look like an expendable luxury.

Which is not exactly to compare them to Steve Jobs and Scott McNealy, or to compare Sun and NeXT to Egypt and Israel, but ol' Hank's fine phrase was on my mind the other day when I learned about the most surprising and yet obvious of partnerships.

It was surprising only in that the alliance always Made Great Sense and yet had continuously failed to happen. Instead, McNealy and Jobs traded shots that were far too personal to be overlooked in anything but the service of necessity.

But necessity, or something close to it, had arisen for both sides. Maybe NeXT wasn't ready to close its doors, but the numbers were hard to put a pretty face on. It had to do something—even something as distasteful as opening the crown-jewel case to the grubby paws of commoners and talking nice to Scott McNealy.

Meanwhile, over at Sun, things were not so copacetic either. Sun had sold a box to just about everyone on the planet who is dweeby enough to suffer such a savage user interface. The slope of saturation could be seen. Besides, the folks at Sun are iron boys. Chip cookers. They haven't really done software since Bill Joy moved to Aspen, and they're much too cumbersome to do it efficiently now.

The reality is that Solaris is an immense and tangled mess. It comes out with bug fixes about as often as Newton, and I still don't know many sysadmins brave enough to install it. Worse yet, the hot new SPARC boxes require it. Sales were poised at the edge of a cliff.

The folks at Sun reviewed their options for an object-oriented development and interface layer. They had Big Pink from Taligent, in which not even Apple and IBM have any faith. They had Cairo lumbering its way through the Microsoft pipeline. And they had NEXTSTEP, the world's greatest operating system and development environment. However distasteful, it was a no-brainer.

For NeXT, it was a case of snatching victory from the jaws of defeat. Commercial software development and sales, which had ground to a near halt, responded instantaneously. Said Andrew Stone of Stone Design: "Already this week, the phone is ringing again. People get a new vibration, and they are just buying software like crazy."

Together, Sun and NeXT might just kick butt and take names. If IBM adopts OpenStep, it's not ridiculous to imagine the new pair becoming the Microsoft of the '90s. At a minimum, there's a good chance that NEXTSTEP is going to be important. There will again be commercial UNIX software for mere mortals!

I may just be manic with relief. Many issues remain to be worked out, such as where X Windows fits into all this. What about Objective-C vs. C++? It could be another Seventh Cavalry mirage.

One interesting sign, though. Over at SunSoft, they were already starting to talk NeXTese. The company's announcement of the deal included such weirdly familiar language as: "Solaris, with this new integrated object application layer, will give SunSoft's rightsizing customers a best-of-breed solution to build mission-critical applications." I wonder if they've licensed the rhetoric, too. ♦

JOHN PERRY BARLOW earns his degree in rhetoric here each month. He can be reached at barlow@nextworld.com.

Here Comes The Sun

JOHN PERRY BARLOW

In a Class by Itself

NEXT GAMES

by SCOTT KIM

NEXTSTEP objects include both visible interface elements, such as buttons and windows, and invisible operating-system elements, such as files and processes. Objects with similar characteristics are grouped into classes, while a specialized object that occurs often enough gets its own subclass. For instance, the Open File panel in NEXTSTEP belongs to the class OpenWindow, which is a subclass of Window. In addition, we say that Window is a superclass of OpenWindow.

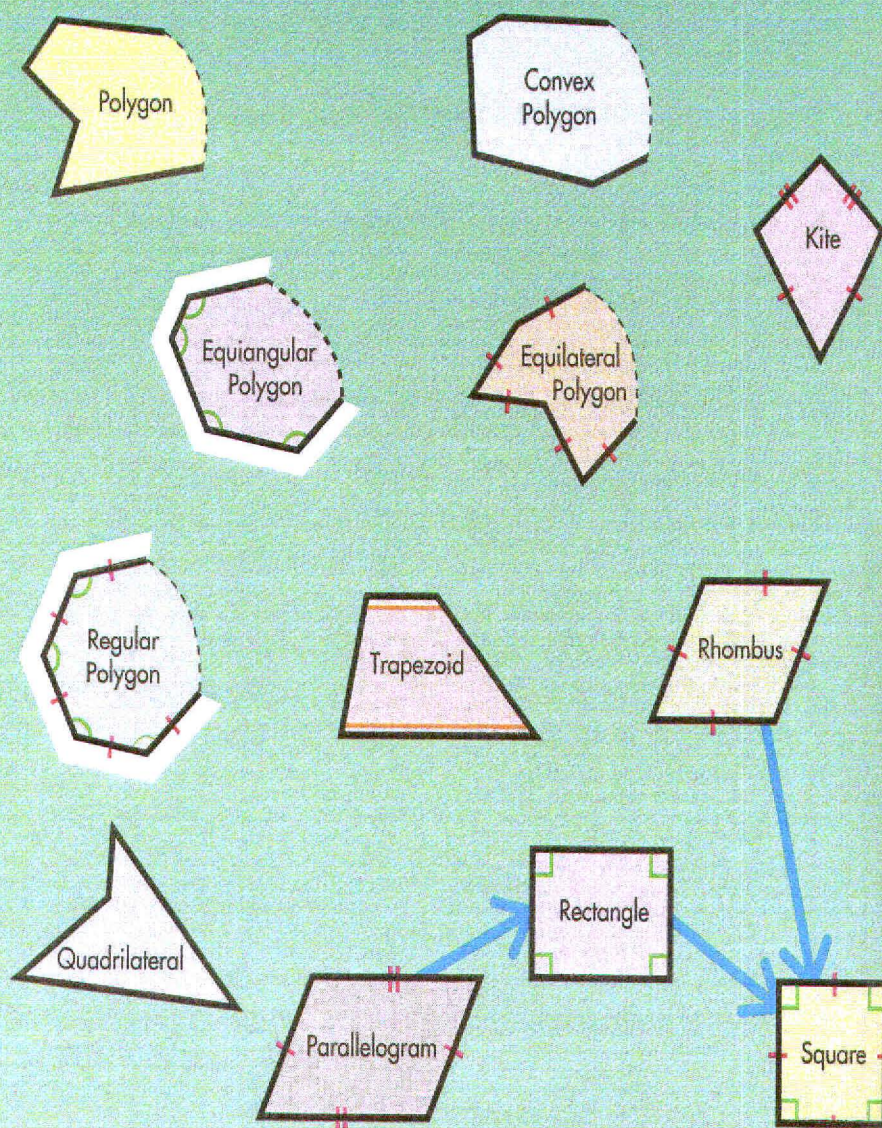
CONTEST

At right are the names of 12 different types of polygons; some are more specialized than others. For instance, a square is a special kind of rectangle, so Rectangle is a superclass of Square. Your challenge is to draw arrows pointing from each superclass to all of its immediate subclasses. Do not draw extra arrows that skip intermediate subclasses. For instance, you should draw an arrow from Parallelogram to Rectangle and from Rectangle to Square, but not from Parallelogram to Square.

Some classes have more than one superclass (a square is both a rectangle and a rhombus). The marks show which angles and sides are equal. Hint: A convex polygon has no angle greater than 180 degrees, and a trapezoid has four sides, two of which are parallel.

Up to ten lucky winners will receive a NeXTWORLD T-shirt. Address entries to Puzzle Editor, NeXTWORLD, 501 Second St., San Francisco, CA 94107. Or fax us at 415/978-3196. And while you're at it, write us a note about the magazine. Entries must be received by February 15, 1994.

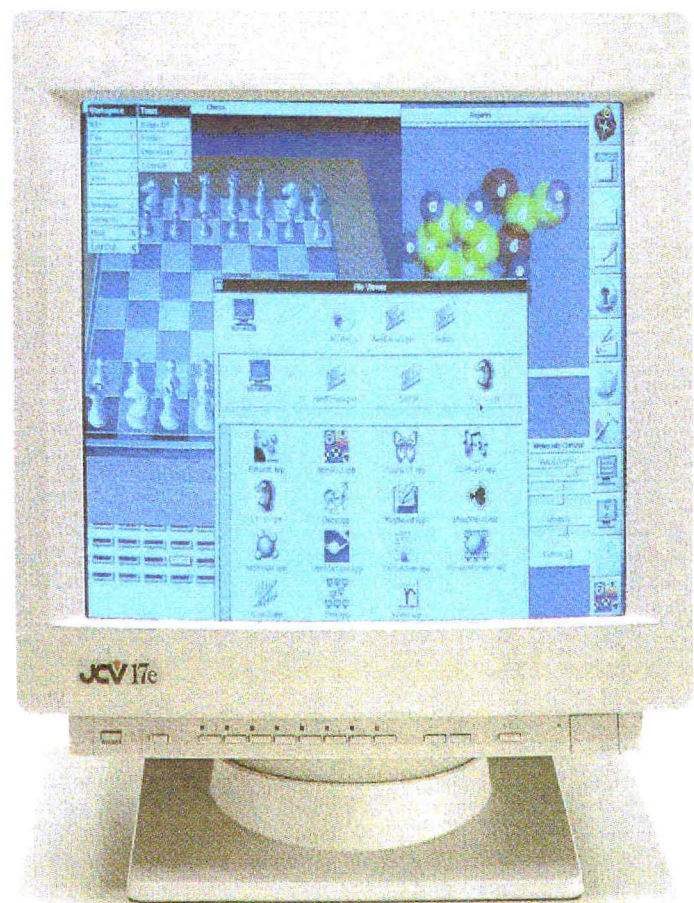
The answers to "The Plot Thickens" in the December issue are: 1. A, 2. F, 3. E, 4. B, 5. I, 6. J, 7. L, 8. K, 9. H, 10. C, 11. D, 12. G.



NeXT Top Gun

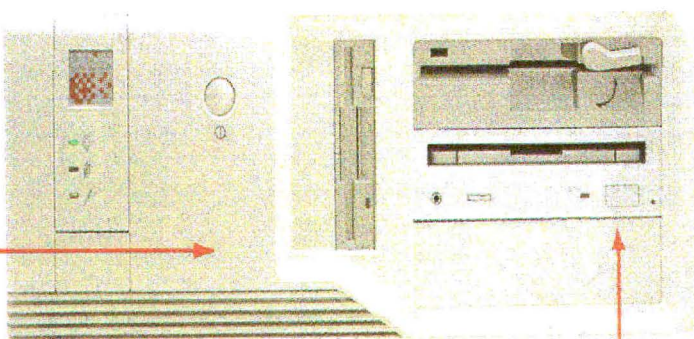
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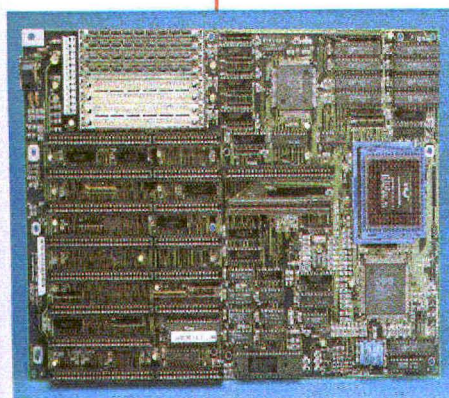


Both the JC/NX and JC/P9 are examples of systems with such an architecture. While the primary focus of the JC/NX is to bring top performance to NeXTSTEP, it is also a serious contender for high speed Windows and AutoCAD performance. In addition to the most powerful frame buffer, the JC/P9 is armed with the most complete and efficient set of graphics acceleration functions. Its reduced command set, similar to RISC technology in workstations, brings the best of two worlds, PC and workstation, to the desktop.

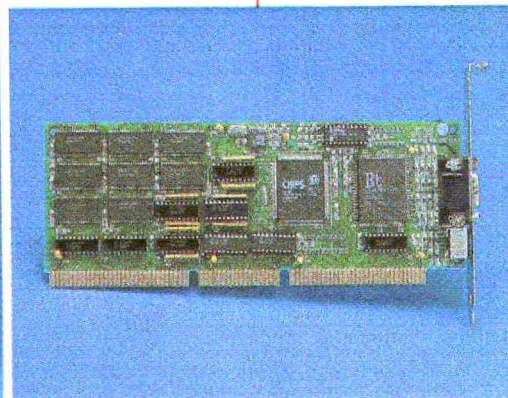
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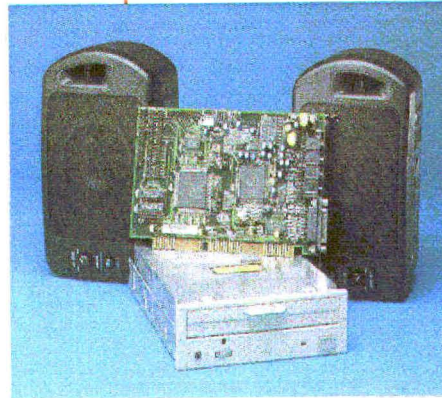
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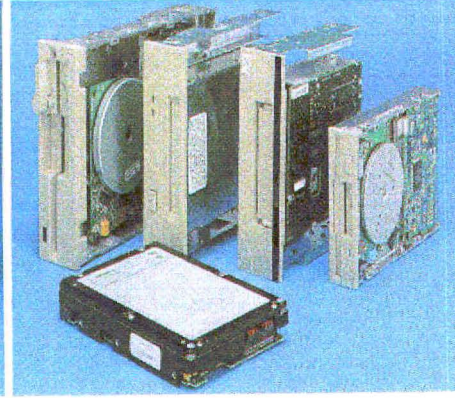
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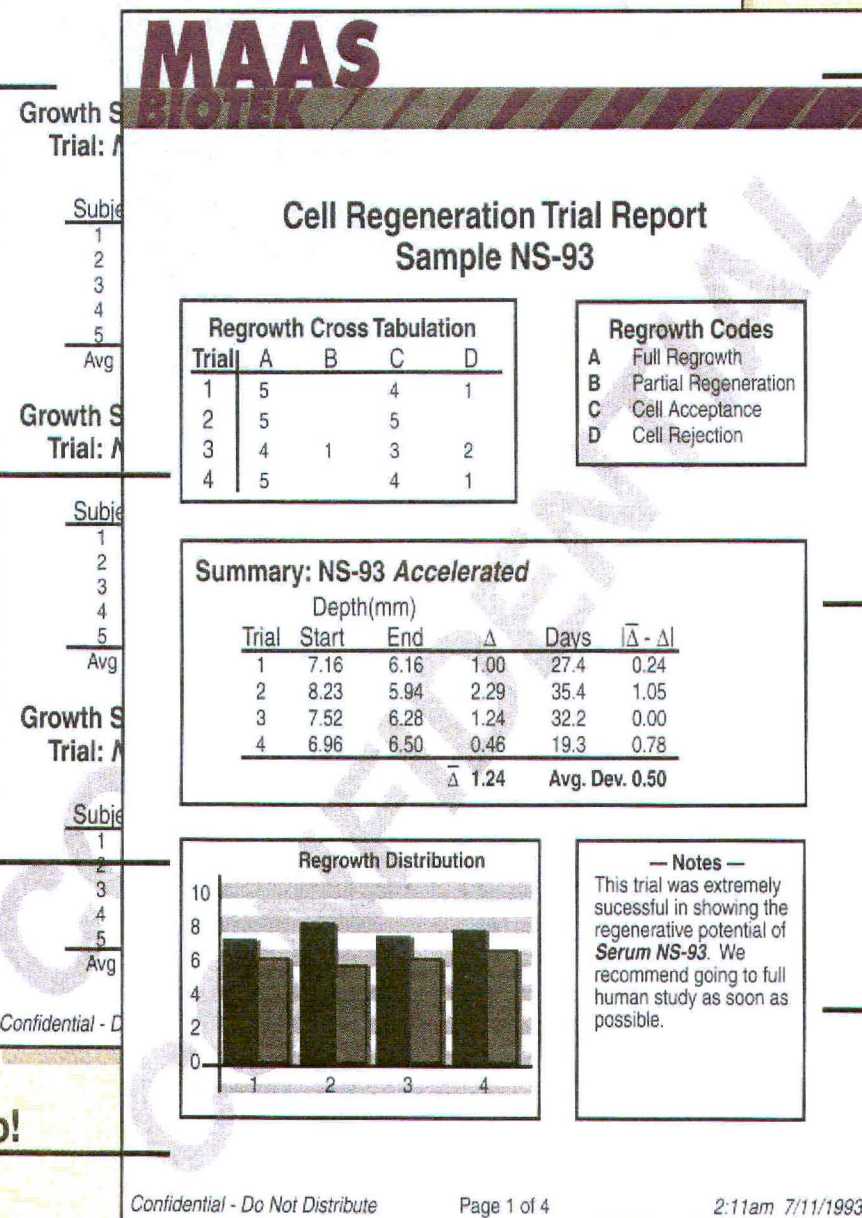
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